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LUST! 46 OBJECTS
OF DESIRE

RADIO CONTROL

car action

THE WORLD'S BEST-SELLING RC CAR MAGAZINE

EXCLUSIVE!

X FACTOR

We drive
XTM's new
**Super
Truck**

IT'S HERE!

Team Losi **Triple-X4** page 118

ASSOCIATED Nitro TC3 RTR • **HPI** Sprint RTR
XTM X-Terminator • **DURATRAX** Evader BX



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MECHANICS**
Learn how to tune
your HPI Micro RS4



JANUARY 2003

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RCX

rcaraction.com

VOLUME 18
NUMBER 1
JANUARY 2003

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ON THE COVER: Counterclockwise from top: HARM 1/5 scale; Traxxas TRX 2.5; Pro-Line 40-Series Big Joe and Road Rage tires on Velocity 6 wheels; LRP Pulsar Competition; Trinity VIS EX-Ira Sanyo 3300 cells; OFNA 9.5 MBX. The big one: XTM Racing's X-Factor, does the big-bully thing at the beach. Photos by Walter Sidas and Pete Hall.

Small cars, big future

RC as we know it was born in the '60s, boomed in the '80s, flourished in the '90s and is bigger than ever in the here and now. But hold on tight because it's set to make a quantum leap in mainstream popularity and pop-culture visibility. And the impetus for this impending explosion of RC interest may surprise you!

Recent trends in RC have spurred much growth already: Kyosho's Mini-Z and HPI's Micro RS4 have launched a new small-scale RC scene; the Traxxas Maxx series continues to invigorate the monster truck universe; and the trend toward ready-to-run vehicles of all types (but especially nitro) is drawing to our ranks vast numbers of first-time drivers who may have never otherwise given RC a shot because they had no time to build, felt insecure about their mechanical aptitude, or simply wanted to drive now rather than later. As important as these trends are, they all require RC newcomers to have some interest in this hobby/sport we know. If you didn't already have enough interest in RC to pick up a copy of *RC Car Action*, or visit a hobby shop, you would probably never know that the Mini-Z, T-Maxxes and ready-to-run cars are out there. RC has grown tremendously from within; now it is poised to grow from without.

As you read this, tiny, inexpensive RC cars are fast becoming the most popular playthings overseas. Hobbico has caught the wave early with its MicroSizers line (one of our "Lust List" favorites; see page 84), and retail giant RadioShack has staked much of its financial future on its similar ZipZaps cars (see for yourself in "Inside Scoop," and check out the new issue of *RC Minis & Micros* for a guide to the new breed of inexpensive ultra-micro cars). Obviously, there have been toy-type RC cars for years, but what makes models like MicroSizers different is that they can easily be upgraded (hotter motors, optional bodies and faster gears simply snap into place), they resemble real-car reproductions (not the fantasy vehicles that transform into robots, etc.), and they have extremely low price tags—about \$20 to \$30—and there's no need for an additional charger, radio gear, batteries, etc. These tiny cars have the potential to sell in the millions as a hot fad toy, and that's where we in the "hardcore" RC community stand to benefit; with that many people trying out RC, even in this simple form, our brand of RC is sure to grow to new highs. Even if only a small percentage move up from MicroSizers to increasingly complex RC "hobby" vehicles, that number could represent a huge boom for RC. And if they just stick with the MicroSizers, well, that's OK, too! More RC is more RC. Whether you're a dedicated racer and into the latest high-end gear, or your biggest goal in RC is to collect all the color combinations and body styles in the MicroSizers line, you're an RC guy (or gal), and that's good enough for me!

Peter Vieira
Executive Editor



COMING SOON

RC Xplosion!

You've seen the "RCX" logo in *Car Action* for a while. Soon, you'll see the first RCX DVD! Along with the first big RCX endeavor, RC Expo—"The Ultimate RC Experience"—2003 will see the release of RC Xplosion. It's an incredible DVD of insane RC action; every laser-etched groove is packed with dirt-slinging nitro buggies,

terrain-flattening monster trucks, sick-air, skate-park insanity, high-speed stunts and, well, more stuff than we can tell you about here. For certain, RC Xplosion will be a must-see. And that's only the beginning for RCX! You'll just have to stay tuned to see what else we cook up, but trust us: it will be cool.

RADIO CONTROL car action

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D5 HOTSTUFF

Flatliner Arm VS Round Wire



Trinity presents the latest in R/C modified motors.....

"Flatliner FlatWire™" technology produces a low polar moment of inertia due to the shape of the wire and the fact it makes a neater compact pattern closer to the armatures core. This allows the armature to start and stop faster for more punch off the line and out of the corners. The increased surface area of FlatWire against the armature web saturates the armature laminations to a greater degree than possible with round wire. The result is a more powerful, more efficient armature for the same number of turns verses round wire.

The D5 Flatliner armatures come in doubles and singles and will fit P-94, D4, D3.5, Speedgems and most modified motors made by other manufacturers. The singles are quite awesome and are the ones Josh and I recommend.

Jim Dieter



www.teamtrinity.com

FAST MAXX

I loved your September article "Street Muscle." I'm a diehard nitro addict, but I found myself reading the article word for word. I had thought that an E-Maxx would make a great sibling for my "Maxxed out" T-Maxx, but the recent release of the 2.5 has re-sparked my interest in purchasing a Nitro 4-TEC. Anyway, my addiction to speed has left me with a question (which I am sure you have been asked several times since the article): what was the top speed of the Project Mad Maxx E-Maxx? My T-Maxx has the full XTM treatment and is now nearly uncontrollable at top end speeds (but it's one bad\$\$\$ backyard basher!).

Jay Bailey
Odessa, MS

We never did radar the Mad Maxx, but assistant editor Kevin Hetmanski set up an E-Maxx with Trinity Monster Maxx 19-turn motors as part of his November 2001 "4X4." In addition to dyno testing the motors, Kev radared his E-Maxx and clocked the truck at 25.4mph—3mph faster than the stock E-Maxx. Keep in mind, that was with the stock gearing; the truck had plenty of power to gear up.

—Pete

PLASTIC FANTASTIC

I have a question about the Hardcore Nitro TC3 project in the November 2002 issue. Are the front and rear shock towers painted? I just broke one of mine, and I'm interested in an aluminum or titanium replacement. I couldn't find a part number in the article or anything like it



on Hardcore's website. The parts in the mag look like aluminum, but they also look painted. Any help? Thanks. [email]
David Milbrandt

Good eye, Dave; they're stock parts that Hardcore painted silver. They look great though! I bet you could even cover the silver with Tamiya Clear Blue and get an anodized effect. Sounds like a good idea for Bob's "Body Shop" column.

—Pete

FRANKENBUGGY

What do people see in T-Maxxes? I'd take my Kyosho Ultima any day. I've converted it into an MT by using Rustler arms and Losi shocks and towers. It also has a Losi JR-T tranny and a Trinity stock motor. I got the buggy for free, and most of the parts I used were just lying around. The truck is so durable that I let my three-year-old cousin run it, and it has been through everything. So, while some guys are spending more than \$2,500 for aluminum, my little cousin is having fun. [email]

Tim Force

Believe me, I'm glad you're having fun with your UltiRustLosi, but have you ever actually driven a T-Maxx or E-Maxx? I think you might change your mind! And by the way, no one says you must add aluminum anything to a Maxx—but it sure is fun.

—Pete

HOTTEST HOP-UPS

I own a Losi Triple-XNT Sport RTR and wonder what the best hop-up parts for it would be. I am only 12 years old, so my wallet isn't in any way fat. Please send me list of what you think are the best hop-up parts for someone with a skinny wallet. I also subscribe to your magazine, and I think it is great. [email]

Jesse D.

The Triple-XNT Sport is very well equipped right out of the box, and it already has the important go-fast parts (namely, a powerful engine, tuned pipe and ball bearings). If you

break or bend any of the stock steel turnbuckles, you can replace them with titanium, but I wouldn't be in any rush to otherwise trick out your truck. Save those dollars for fuel, tires and track time!

—Pete

DID THAT

I've been thinking for a while about getting a nitro truck, and I have narrowed my choices to four trucks: Traxxas Nitro Rustler RTR, Associated RC10GT RTR, Kyosho Ultima ST GP RTR and the Schumacher Nitro .21 XT-R Desert

Storm. It would be great if RC Car Action would have an article about a nitro truck shootout with those four trucks. It would be a big help to me, and I'm sure there are many others who are looking for all the info and specs on them. [email]

Dan

Actually, we already did that shootout; see the August 2002 issue of RC Nitro. In addition to the trucks you mention, we tested the CEN Fun Factor MT, XTM Baja Blade, Thunder Tiger DT10 and Tower Hobbies ST-15. The

HOTSTUFF

RC9800



"Monster Horsepower™" & "TRC" embroidered hats. L-XL fitted style with elastic. \$9.99 each

RC9700



TOURING TIRE HAULER



Hauler bag for 8 pairs of tires. Comes with TRC tire tubes. RC9048, \$24.99



www.teamtrinity.com

READERS WRITE

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TRINITY

Schumacher XT-R wasn't in the mix, but it did get its own review in the January 2001 issue of *RC Car Action*.

—Pete

HUMVEE HELPER

Is the Tamiya M1025 Humvee available in kit form? I want to buy one, but I don't need the motor and electronics that are included with the XB version. I'd appreciate any help you can provide. [email]

Jeffrey Lawley



You can still get the kit version of the Humvee; it's item no. 58154 and sells for nearly \$100 less than the RTR. The kit has a different chassis tub from the RTR's (it's open on top), and the kit includes an unpainted body molded in green. The drive train, body, wheels and tires are otherwise identical. Kit bonus: the RTR Humvee has undamped shocks, but the kit truck gets cushy oil-filled units. Have fun building!

—Pete

YOU SAID IT

"One month and some hard work later, I had my Stampede!"

I am 15 years old; exactly one year ago, I was at Wal-Mart looking down the magazine aisle, and I picked up the September 2001 issue with the six-car sedan shootout. As I flipped through the magazine, I saw the article about the Ultimate Stampede and decided that I had to have a Stampede! When I got home, I asked for a loan because I only had \$40, and the truck at my local hobby store was \$159; my parents would only give me \$20. I decided that I would do anything for the cash. One month and some hard work later, I had my Stampede! It is AWESOME!

On top of that, I convinced a friend to get one, too! Since then, I have brought 17 people into the hobby. I have also gotten my 7-year-old sister into RC trucks; now she loves them, and she loves to look at your magazine. So I decided to write and let you know that all of this has happened because of all of you and your magazine. I also want to say that "You guys ROCK" and to keep up the good work! Thanks for reading my letter. [email]

Cody Ritchey

You're the one who rocks, my friend! I'm especially impressed by your money-scrouring abilities, which is why I chose that quote from your letter. I get way too many "Boo-hoo, my parents won't

give me money" letters, so your can-do attitude really made my day. Along with a Trinity Reference body, I'm sending you a big stack of *RC Car Action* and *RC Nitro* decals for you and all your RC buddies.

—Pete



Each month, "Readers Write" sponsor Team Trinity awards the "You said it" letter writer the Reference body of his choice. This is Trinity's new shell for the Associated RC10GT.

WRITE TO US! We welcome your photos, drawings, comments and suggestions. Letters should be addressed to "Letters," Air Age Inc., Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

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inside scoop

THE LATEST STUFF • SPY SHOTS • INSIDER INFO

Savage SHELLS



HPI El Camino SS and Dodge Ram for Savage 21

HPI already has new bodies for its just-released Savage 21, and thanks to the compatibility of the Savage 21 chassis with T-Maxx bodies, that means the new El Camino SS and Dodge Ram bodies shown here will also fit your Maxx. And yes, the El Camino does include the blown engine and side pipes! The styling of these officially licensed bodies speaks for itself; all we'll add is that both shells include precut decals, window masks and overspray film. HPI Racing (949) 753-1099; hpiracing.com.



super sanyos

TRINITY VIS EX-Tra Sanyo 3300mAh Team Cells

The biggest name in batteries is now in on the 3300 game. According to Trinity, Sanyo's new mega-cells perform like the Sanyo's 3000s but with an extra 300mAh of Main-making run time. Heck, at the pace cell-battery technology is progressing, we'll be able to race five-minute qualifiers while running functional headlights and sound systems. As usual, Trinity will offer the new batts in VIS-Matched Race and Team packs.

Trinity Products Inc. (732) 635-1600; teamtrinity.com.



AFTERSHOCK

RC TRI-X AFTERSHOCK

If eight shocks just aren't enough for your Traxxas Maxx, the Aftershock is all you. According to RC TriX, the clever bellcrank-actuated shock system will "stiffen" the suspension for better controlled jumps and landings with less bottom-out. The Aftershock setup is also claimed to reduce the chance of a rollover in on-power turns. It can be used on either end of the truck, and you can even install Aftershocks on both sides of the shock towers. The system fits the original Maxx trucks and the new TRX 2.5 model, and it is compatible with aftermarket suspension arms. Although shown here with an aftermarket shock tower, the Aftershock is designed to work with standard Traxxas towers.

RC TriX (866) 4rc-trix; rc tricks.com.



Wild WEDGE



PROTOFORM PF-1 LMP

Apparently, someone forgot to tell Protoform that 1/8-scale on-road bodies are supposed to be ugly! The Northstar LMP-inspired PF-1 LMP is easily the best-looking, open-cockpit, big-car body ever, and it's built to perform. The aero stuff has been massaged to allow maximum downforce with minimum drag, and an add-on spoiler extension with a gurney flap is included for fine-tuning. Decals are part of the package, and the PF-1 LMP is completely ROAR- and IFMAR-legal.

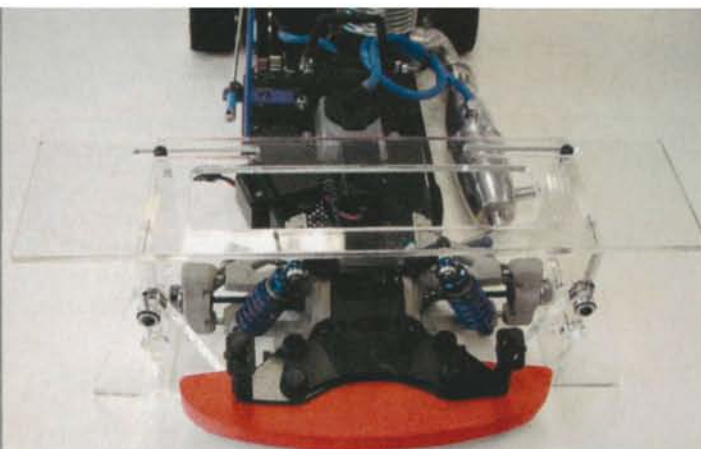
Protoform Inc.; distributed by Pro-Line (909) 849-9781; pro-lineracing.com.

Gettin' JIGGY >>

TRINITY Setup Jigs

We've all got RPM camber gauges in our pit boxes for those quickie camber checks, but for laser-precise camber and toe adjustments, setup jigs like Trinity's new units (built in Italy by Xtreme) are the way to go. Trinity offers the setup system in versions for touring cars and 1/8-scale on-road and off-road cars. The set includes four camber plates with gauge plates and a toe-in plate. Combine the new jigs with Trinity's setup board, and your ride will be dialed.

Trinity Products Inc. (732) 635-1600; teamtrinity.com.



NITRO TERMINATOR

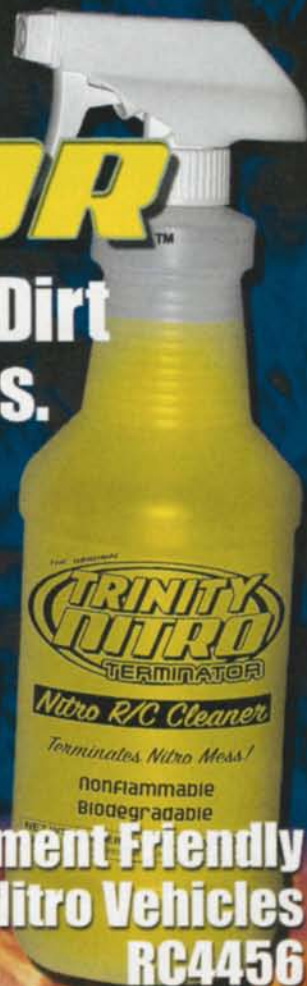
Removes Nitro Racing Fuel, Oil, Dirt
& Grime. Safe on Most Plastics.

Non-Flammable!

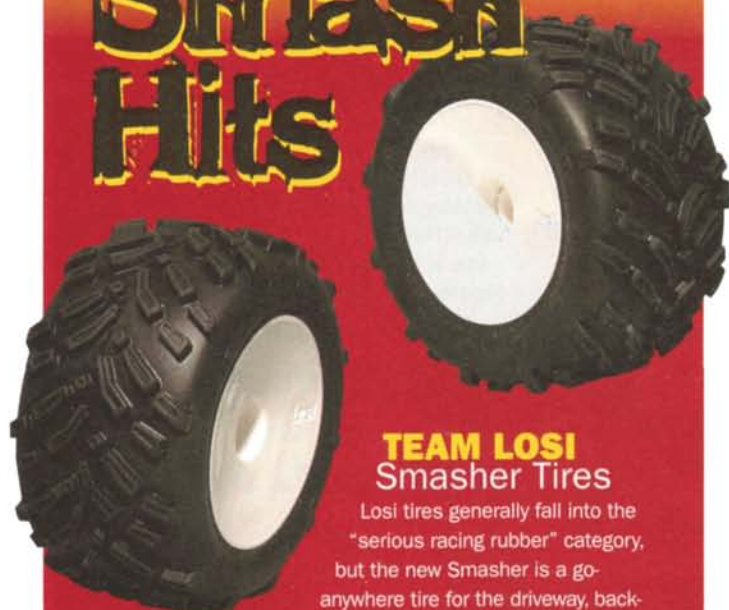
Bio-Degradable!



The Super Safe & Environment Friendly
Way To Clean Your Nitro Vehicles
RC4456



Smash Hits



TEAM LOSI Smasher Tires

Losi tires generally fall into the "serious racing rubber" category, but the new Smasher is a go-anywhere tire for the driveway, backyard, vacant lot and any other terrain your truck could encounter. Losi molds the tires in its Red compound, and firm foam inserts are included.

Team Losi; distributed by Horizon Hobby Inc. (800) 338-4639; teamlosi.com; horizonhobby.com.

Itty Bitty Integra

EPOCH Indoor Racer

At 1/48 scale (about 4 inches long), Epoch's new micro machine splits the difference between 1/24-scale minis and the 1/60-ish-scale ultra-micros. The extra size gives Epoch room to build in features the ultra-micros don't have (yet) such as fully proportional steering and changeable frequency crystals. The included transmitter is pretty cool, too; it has an adjustable grip, and the trigger throw can be adjusted to limit the car's speed. We'll all use the maximum setting, but when your little cousin comes over, you can dial it back to spare the crisply molded Integra bodywork!

Epoch; distributed by Apex RC Racing (209) 834-1795; apexrc-racing.com.



Over \$450.00 of after market parts are incorporated into the "Team" version of the Reflex NT including:

- Front One Way Vented Disc Brake
- Aluminum Hex Adapters for Wheels
- Stiffer Composite Suspension Components
- Aluminum Brake Lever
- Front & Rear Roll Bars
- Certrax Type Clutch
- Big Bash Bumper With Revised Front Body Post Mounting
- Pivot Ball Shock Upper Mounts
- Belrin Shock Pistons
- Low CG Motor Mounts
- Aluminum Front Shock Tower

Kit does not include, motor, pipe, tires, body or electronics

NT1001 "REFLEX NT TEAM"





Go Long!

PRO-LINE Extended Ford F-350

If you've extended the wheelbase of your Maxx with a big-block conversion chassis, Pro-Line's new body has your needs covered (literally). The F-350 extended body is custom-fit for trucks with 13- to 15-inch wheelbases, and every inch is filled with smooth, flatbed lines. As with all Pro-Line shells, the 4-door, long-bed body comes with a full decal sheet and overspray film.

Pro-Line (909) 849-9781; pro-lineracing.com.

Wild Wheels



ENDLESS Wheel system

These clever 3-piece wheels use a real, metal brake rotor, a bright chrome faceplate and a clear polycarbonate rim to create a realistic disc-brake effect. If you decide to change your car's look with a different Endless wheel, other faceplates can be purchased separately. The

Diablo (in package), Turismo and Karisma styles are shown here; they're just three of the nine available styles.

Endless; distributed by Philalay LLC (206) 683-4408; endlesswheels.com.



Bank on it!

TRINITY Gold Peak 2000mAh AA cells and Power Bank

Break the alkaline habit! Trinity's new NiMH AAs deliver an honest-to-gosh 2000mAh (maybe even a little more!), so you can get up on the stand for those half-hour nitro Mains without the dreaded low-voltage transmitter beep-a-thon. When it's time to recharge, the Power Bank charger has you covered; it can be set to charge NiMH or Ni-Cd AA cells, and it uses true peak-detection software to do the job right.

Trinity Products Inc.
(732) 635-1600; teamtrinity.com.

Special FX



PRO-LINE

Hey, isn't that a Ferrari Enzo? It sure is, even if Pro-Line calls it the "FX" (Ferrari's in-house name for the F-50 follow-up before it was officially dubbed the "Enzo," for Ferrari's founder). The FX does a good job of capturing the full-size car's Pininfarina-penned lines, and Pro-Line includes a loaded decal sheet with grill, headlights, taillights and other details that make it easy to style it out with little more than a can of red paint. Even the rear-window decal is trick; it depicts the Enzo's 660hp V12 beneath the "glass"! Plastic wing struts with hardware are included, too, and peel-off overspray film protects the shell when you paint.

Pro-Line (909) 849-9781; pro-lineracing.com.

HPI Super Nitro RS4 RTR Lamborghini Murcielago

Who can resist a Lamborghini—especially when it's the new 600hp, V12-powered Murcielago? The HPI guys are betting that few will resist a Super Nitro RS4 wearing the bull's skin, and they're probably right. All the usual Super Nitro RS4 features are in place beneath the luscious bodywork: Nitro Star .15 FE engine, TX-2 radio, triple-belt 4WD, anodized-aluminum chassis and full bearings—to name a few.

HPI Racing (949) 753-1099; hpiracing.com.

RAGING BULL





BAG OF TRICK

WING TOTE Truck Bag

How do I know you're a monster-truck racer? Easy; there are muddy chevron prints on your passenger seat. No more!

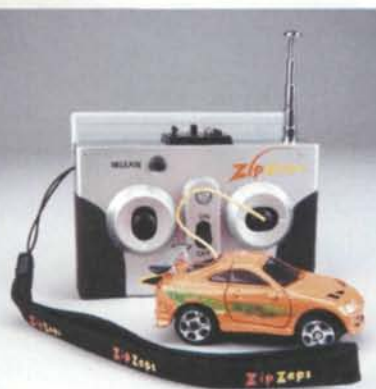
Wing Tote's Truck Bag is extra big, so it can easily swallow your 1/8-scale monster truck (or anything smaller). Its rugged construction will stand up to the weight of your rig and whatever you stuff into the cargo pockets (one is designed to hold your transmitter). This sort of thing really is my bag, baby!

Wing Tote (425) 251-5241; wingtote.com.

Rainbow Rubber

OFNA Colorz Buggy Tires

So, you thought Travis Pastrana looked pretty cool with those yellow and blue tires on his Suzuki freestyle bike, eh? Now you can get the look for your 1/8-scale buggy with OFNA's Colorz line, which includes red, yellow, green and blue sneakers with your choice of "X" or "X=" tread patterns. Foam inserts are included, and according to OFNA's team drivers, the tires hook up. OFNA Racing (949) 586-2910; ofna.com.



Fast & Furious Micro Action!

RADIO SHACK
ZipZaps

There's a lot going on with the new ZipZaps. In addition to a bunch of popular body styles that include Ford SVT Cobra, Honda Civic, Chrysler PT Cruiser and Porsche 911, ZipZaps are available with a "The Fast and the Furious" Mazda RX7 shell. That body is part of the "The Fast and the Furious" Street Tuner Upgrade Kit, which also includes Turbo and NOS Nitrous Speed motors, hotter gear ratios, two sets of tires, an additional Mitsubishi Eclipse GSX body and custom wheel covers. Other performance upgrade packages are available, too, and there's even a Rally Course track-setup kit; more accessories are on the way, including trading cards, carrying cases, cleaning kits and more! ZipZaps; distributed by RadioShack (800) The-Shack; zipzaps.com.

HIP TO BE SQUARED

XXX-MAIN Squared Video/DVD

Let's see ... lots of crash-and-bash action, lots of don't-try-this-at-home antics and Josh Cyrul's infamous house jump (as in ... he jumps an 1/8-scale buggy over a house). There's also

"Girls Gone Wild"-ish babe footage sprinkled throughout, so be sure to watch the

video before you pop it into the VCR for mom and dad.

Bonus: the first 3,000 copies of "Squared" include free stickers from the video's sponsors! Get it on VHS or DVD.

XXX-Main
(877) 744-6793;
xxxmain.com. ■



readers' rides

YOUR BEST BUILDS

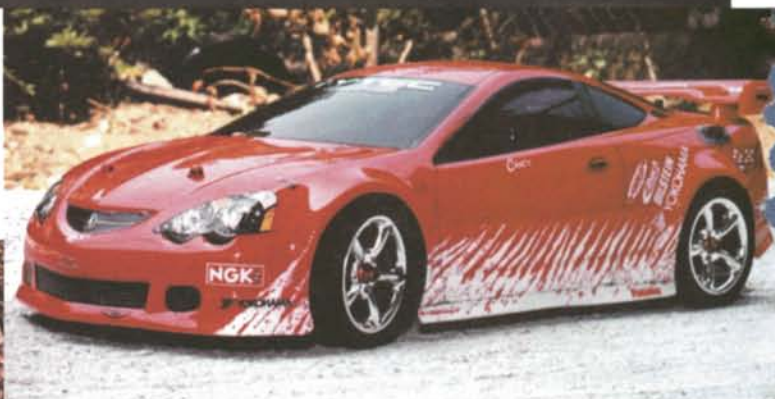


PASCAL VERBART, KLOETINGE, HOLLAND CORALLY C4.1

I'm not usually a big fan of computer-enhanced photos, but this Corally C4.1 painted in Jordan F-1 colors was just too good to pass up. A 15T Corally motor powers the car, controlled by an LRP Quantum Pro Reverse speed control. Among the rest of the onboard electronics are a Novak XXL receiver, Panasonic 3000 HV cells and a KO Propo 713 steering servo. Pascal races the Protoform Citroen Xsara-body racer during the winter months.

MIKE CRUSEN, MENOMONIE, WI TRAXXAS RUSTLER

It's little wonder that Mike writes that he loves his RC car—especially since it took the first-place trophy at the Short Half RC Raceway in Eau Claire, WI. The Rustler has an LRP Sport ESC, Hitec Super Torque steering servo and a Trinity P2k2 Pro motor, and it's finished with Pro-Line rubber and an F150 body.



WAYNE GREGORY, BROOKLYN, NY HPI RS4 3 SS

Wayne dedicates this touring car to his 11-year-old daughter, Candy, and he admits that she drives it better than he does at times. The two-tone RSX features Pactra Pearl White flames with a bright red main color. The RS4 3 features a Futaba radio system, Pro-Line Sedan Hawg tires mounted on HPI R5 wheels, a Hangar 9 fuel filter, an HPI fiber disc brake and a Robinson Racing lightweight flywheel.



JAMES SOUTHWARD JR., GAHANNA, OH HPI PRO 3

This is a good example of beauty in simplicity; the HPI Honda S-2000 body looks perfect with the stock decals and the one-color painted scheme. James built the Pro 3 to race in the stock division at his local track, and he has outfitted it with Futaba radio gear, a Novak TC2 ESC, front and rear swaybars, a Green Machine 3 motor and Robinson Racing pinion.

WIN A ONE-YEAR SUBSCRIPTION TO RADIO CONTROL CAR ACTION MAGAZINE!

Send a sharp, uncluttered, well-exposed color photo of your vehicle (no Polaroids) and a brief description to "Readers' Rides," *RC Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. If we publish your photo, you'll receive a free, one-year subscription to *RC Car Action* and will be eligible to win the "Reader's Ride of the Year Contest." Write your address and phone number on your letter and on the back of every photo you send. Good luck!



**DOMINQUE SEIM,
ALHAMBRA, CA
HPI RS4 MT**

How's this for a unique application of Pepsi's trademark colors? Dominique's stadium truck has a Trinity Green Machine motor, a Novak Explorer 2 speed control, MIP CVDs, Pro-Line tires and a Robinson Racing top-shaft pulley.

**READERS'
RIDE
OF THE
MONTH**

Marko's transformation of this Tamiya Hummer into a classic hot-rod Chevy shows what's possible with imagination and ingenuity, and it's our Reader's Ride of the Month.

**MARKO PAAJAMEN,
MISSISSAUGA, ONTARIO, CANADA
TAMIYA HUMMER
COR-VERSION**

Believe it or not, but this gorgeous '67 Corvette Stingray began as a Tamiya Hummer. Marko replaced the military chassis' shock towers with a set of regular body posts and then fitted it with a Kyosho Nostalgia Series Corvette body and matching Nostalgia Series rims. The 'Vette now has a Reedy motor and a Novak Reactor ESC.





CLAYTON SANDIDGE, ROCHESTER, IL TRAXXAS T-MAXX

It took Clayton only three months to turn his Traxxas monster into quite a showpiece. His truck is equipped with an O.S. CV-R engine, an MIP clutch and Stinger exhaust, lots of Powerline aluminum, Trinity shocks, Traxxas bulkheads and bumpers, DuraTrax bumper mounts, Pro-Line Maxx Mulcher tires and an F-350 body.

RICH JACKSON, VALPARAISO, IN TRAXXAS NITRO 4-TEC

Our "Accessory Overkill" project article (see the 2001 issue of *RC Touring Car*) inspired the creation of this Ferrari 360-body Traxxas Nitro 4-TEC. Shortly after the article was published, Rich purchased every Powerline Racing aluminum component available for the sedan; he then went on to add the Traxxas graphite upper deck and Pro gears, too. He painted the body with Pactra Daytona Yellow.



Congratulations to the Newest World Champions!



Masami Hirosaka
2002 IFMAR 1/12
World Champion
Reedy Ti Modified Motor



Surikarn Chaidejsuriya
2002 IFMAR Touring Car
World Champion
Reedy Ti Modified Motor

REEDY

The Power Behind
TWENTY-FOUR IFMAR World Champions!

How many World Champions use YOUR brand of motors?

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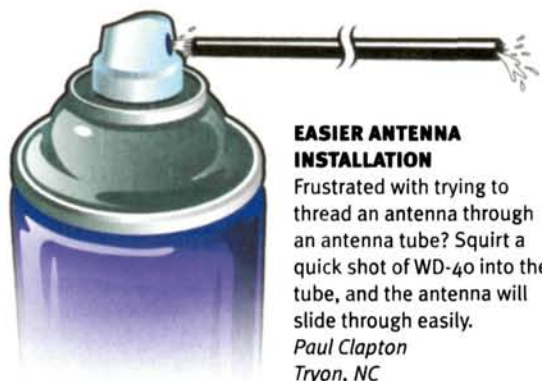


HINTS, TRICKS, TIPS AND IDEAS FROM READERS LIKE YOU

**SIMPLE GLOW-PLUG INSTALLATION**

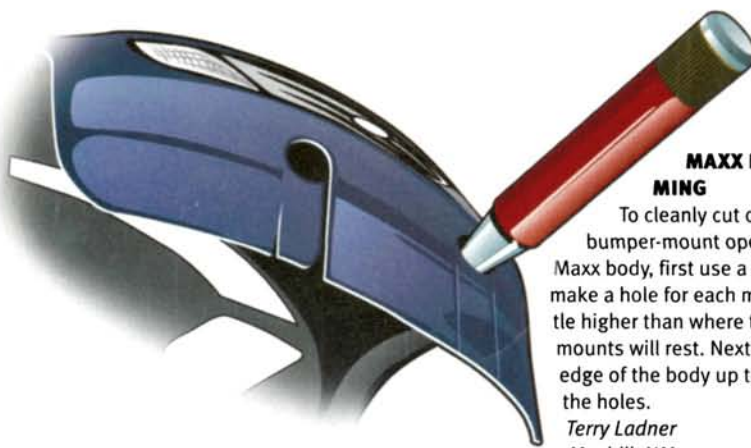
It can be difficult to screw a glow plug into an engine that has a tall head. But this technique should help: force a piece of fuel line over the plug, and then feed the connected pieces down into the head's opening. Turn the tube to begin threading the plug into the engine, then pull off the tube and tighten the plug with a regular plug wrench.

*Melvin Budd
Newalla, OK*

**EASIER ANTENNA INSTALLATION**

Frustrated with trying to thread an antenna through an antenna tube? Squirt a quick shot of WD-40 into the tube, and the antenna will slide through easily.

*Paul Clapton
Tryon, NC*

**MAXX BODY TRIMMING**

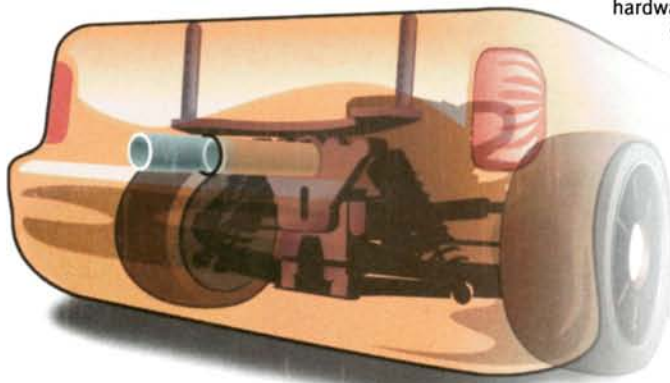
To cleanly cut out the bumper-mount openings for a Maxx body, first use a body reamer to make a hole for each mount just a little higher than where the bumper mounts will rest. Next, cut from the edge of the body up to each side of the holes.

*Terry Ladner
Mayhill, NM*

SUPER NITRO EXHAUST ROUTING

If your Super Nitro RS4 is spraying its exhaust inside the body, replace the stock exhaust tubing with a longer piece (available at hardware stores) to allow the exhaust to exit behind the body.

*Michael
Summers
Ann Arbor, MI*

**POWER-SUPPLY-SHORT PROTECTION**

When using alligator clips on a power supply, put a tire between the positive and negative clips. This will prevent them from shorting if the ends happen to touch each other.

*Kurt Johnson
Ardmore, PA*

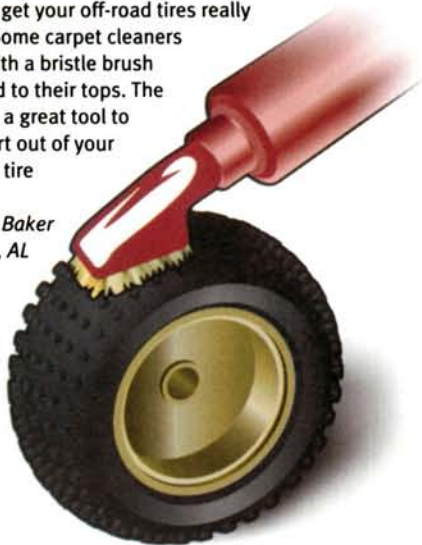


WIN AN OFNA YO-YO, OFNA OB4 AND RC CAR ACTION SUBSCRIPTION! SEE NEXT PAGE FOR DETAILS.

TRACKSIDE OFF-ROAD-TIRE CLEANING

Want to get your off-road tires really clean? Some carpet cleaners come with a bristle brush attached to their tops. The brush is a great tool to clean dirt out of your off-road tire treads.

Howard Baker
Clanton, AL



THROTTLE-RETURN SPRING

If your nitro vehicle uses a slide carb and doesn't have a throttle-return spring, try this. Mount a spring between the needle-valve shaft and the end of the slider arm. If the power to your radio dies, the spring will return the throttle to neutral. [email]

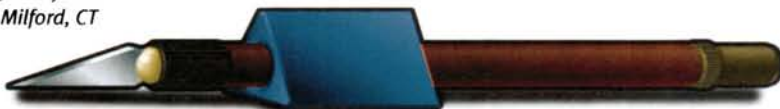
Kenny Darmer



NO-ROLL HOBBY KNIFE

To prevent your hobby knife from rolling off your workbench, put a triangular rubber sleeve on it. You can find the sleeves in most office-supply stores.

Jeremy Davis
Milford, CT



Acetone

UNCLOG A CA BOTTLE TIP

If the tip of your CA bottle becomes clogged, remove the tip and soak it in acetone (nail-polish remover). The acetone will dissolve the glue so that you can use the tip again. Soak the tip in a closed container to avoid inhaling the fumes and to prevent the acetone from evaporating.

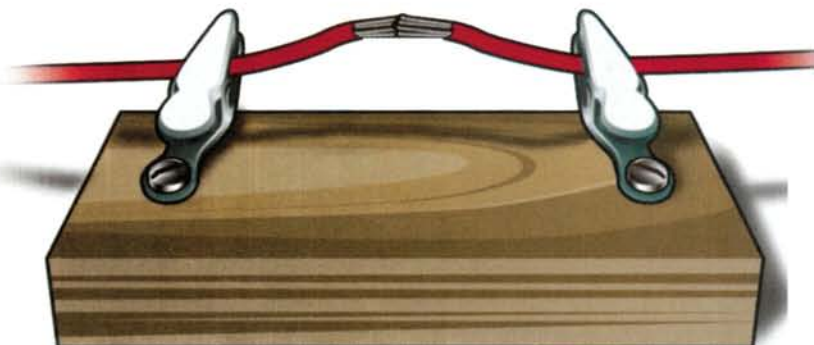
William Park
Chatsworth, CA



A HELPING HAND

Here is a helpful and easy-to-make tool for soldering wires. Screw two alligator clips into a wooden block and use them to hold wires in position for soldering. [email]

Matt Moriarti



"Pit Tips" are submitted by readers and are screened for functionality, feasibility and safety but are not tested by Radio Control Car Action. Radio Control Car Action and the submitting authors are not responsible for personal injury or damage to models or tools resulting from readers' use of "Pit Tips."

WIN AN OFNA YO-YO AND RC CAR ACTION SUBSCRIPTION! Radio Control Car Action will give a 6-month subscription (or extend an existing subscription) and an OFNA Yo-Yo to the author of each idea used in "Pit Tips." The "Top Tip" winners will also be considered for "Tip of the Year" to be selected at the end of each year. The "Tip of the Year" winner will receive an OFNA OB4 International RTR electric car kit. Send a rough sketch to "Pit Tips," c/o Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. We're unable to publish many good tips because we don't have the sender's name and address. Please note: because of the number of ideas we receive, we can neither acknowledge every one nor return unused material.

troubleshooting

YOU'VE GOT PROBLEMS? WE'VE GOT FIXES.

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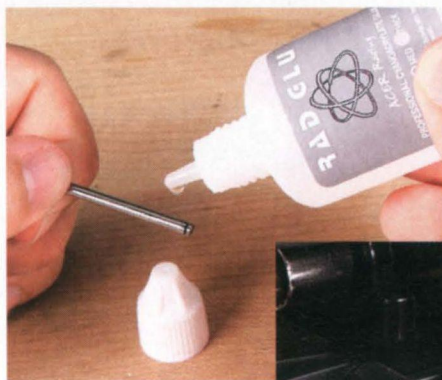


SLOPPY HINGE PINS

I own a Tamiya TG10R that has a lot of suspension slop. I replaced the front suspension arms, and that took care of the problem for a while, but after three days of racing, the slop returned. Would installing aluminum suspension arms help prevent the slop from developing after a few races? [email]

Martin Fulcrum

You must be hitting a lot of boards when you race, Martin; the suspension components on the Tamiya TG10R have very little slop, and it should be a long time before you notice any play. There's an easier—and more affordable—way to remove slop from suspension components. Remove the suspension-arm pins (one at a time), apply a few drops of CA to the hinge pins, and then slide them back into the suspension arm. Let the glue dry for a few hours, and then remove the hinge pins. The glue will not stick to the hinge pins' stainless-steel surfaces, but it will bond to the suspension arms' molded surfaces. The glue will fill all of the gaps and allow the suspension arms to pivot with less slop. After you've eliminated the slop from the suspension arms, move on to the hinge pins that secure the C-carriers and steering knuckles to the suspension arms. You should notice a dramatic improvement.



Apply CA liberally to the hinge pins (be careful not to get any glue on your fingers). Reinstall the hinge pins, and then let the glue dry for a couple of hours.

The last step is to remove the hinge pins and then reinstall them, or simply move the suspension arms up and down to free the hinge pins from the glue.



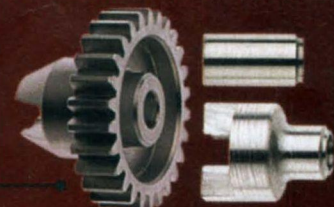
REAL PERFORMANCE PRODUCTS!

Traxxas Lightened Spur And Double-Disc™ Slipper Kits



RRP's NEW line of Lightened Spur and Double-Disc Slipper Kits for Traxxas Nitro and T/E-Maxx trucks are designed to improve performance and increase reliability. This combo incorporates a machined steel or Super-Tough plastic spur, a Vented Aluminum Clutch-Plate/Gear Adaptor (small or large), 2 Slipper Pads and 2 Plates to deliver the adjustability you need and the increased performance that you demand. **Complete Slipper Kits** are available in the following sizes: RRP 8166 Slipper Kit with 66T Super-Tough plastic spur (Stock Size) for E-Maxx RRP 8172 Slipper Kit with 72T Super-Tough plastic spur for Traxxas Nitro RRP 8465 Slipper Kit with 65T Steel Spur for Traxxas Nitro RRP 8472 Slipper Kit with 72T Steel Spur (Stock Size) for T-Maxx. Spurs, Clutch-Plate/Gear Adaptor and Slipper Pads also sold separately.

T-Maxx Forward ONLY Hardened Gear Kit



This kit contains a 26T hardened aluminum output gear, a forward drive hub adaptor and spacer. RRP 8585

Nitro and T/E-Maxx Accessory Spurs



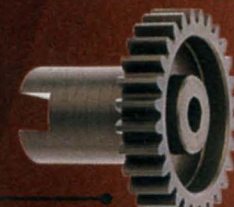
A wide range of spurs fit our Double-Disc Slipper Kits. Choose from machined Super-Tough plastic spurs in 66, 68, 70, 72 and 76T sizes, RRP 82XX, or CNC machined steel spurs available in 65, 72 and 76T sizes, RRP 83XX. Small Clutch Plate/Gear Adaptor fits 65 thru 70T spurs. Large Clutch Plate/Gear Adaptor fits 72 thru 76T spurs.

Traxxas Nitro Hardened Steel Clutchbells



CNC Machined from solid steel these bells are built to last. They take the 5x11 bearing (NOT included). Available in 19T, RRP 8119, 20T RRP 8120, 21T RRP 8121 and 23T RRP 8123.

T-Maxx Hardened Forward Primary Gear



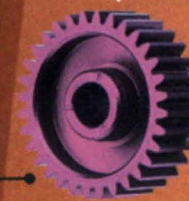
Machined from solid aluminum and hard coated. A direct replacement for the stock gear. RRP 8528

48P Absolute Series Pinions



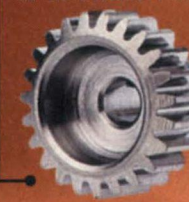
Super hard, lightened and cut with unmatched precision. Great with any spur, but with an Absolute spur, even on-off noise is gone! Available in 48P in 16T thru 28T sizes. RRP 1416 - RRP 1428.

48P / 64P SuperLite Aluminum Pinions



They're lightened, hard coated and precision cut. Available in 48P in 16T thru 28T, and 64P in 24T thru 38T. RRP 30XX (48P) and RRP 31XX (64P). Only \$5.25

48P Hard Nickel Plated Steel Pinions



These precision cut gears have an extremely hard coating that makes them really last. Available in 12T thru 35T. RRP 1012 - RRP 1035

Make No Compromises.

www.robinsonracing.com

GHOST IN MY LYNX 3D

I've got a Lynx 3D FM transmitter with a Hitec Spectra module and a Novak XXtra synthesized receiver. I've had the transmitter for a couple of years, and it worked great until recently. It has a 10-model-memory capability, and I have programmed settings for five RC cars into it. Whenever I choose model number 1, however, the vehicle glitches badly, and all of the adjustments (such as endpoint, dual rate and idle up) have exaggerated values like 500 percent. The endpoint is only supposed to show a maximum value of 125 percent, yet 500 percent is displayed on the screen. All of the other model-memory assignments work fine, so I'm baffled. I no longer use the model 1 memory location because of this problem, but I like to store the settings for my most used vehicle there. Should I send my radio to Hitec for service, or do you have any suggestions? [email]

Mike Hamilton



Above: after selecting the appropriate model number, scroll through the various menu screens until you get to the "AL" RST option.

Left: pressing the Data increase/decrease buttons simultaneously resets that model number to the factory default settings.

And I thought I was the only racer who had this problem! My Lynx 3D had the same symptoms, but at the model number 5 location. I did just what you did; I stopped using that particular model number until I realized that all I had to do was to reset that particular model assignment to the factory default settings. You can do the same. First, select the model number to be reset in the Model select (SL) screen (in your case, it will be model 1). Next, scroll through the various adjustments until you get to the "AL" RST screen. Last, press the Data increase/decrease keys simultaneously. This will reset that model assignment to the default factory setting, and it will be ready to store the setting for your model.

Interestingly, the problem never recurred on my radio after I reset the model assignment. If the problem persists after you've reset it, however, do send it to Hitec for repair.

NEW T-Maxx Steel Diff Gear Set



T-Maxx / E-Maxx differential gear set, includes: 1 beveled pinion gear, 1 beveled spur gear, 4 re-usable stainless steel Phillips head screws, 1 tube Associated Black Grease, and a shim kit for spider gears with 10 .003" shims. 2 sets needed per truck. RRP 8590

NEW T-Maxx Aluminum High Performance Brake Kit



New, lightweight aluminum high performance brake kit, includes bigger, more aggressive brake pads and steel backing plates. One piece vented rotor minimizes side-to-side wobble. RRP 8560

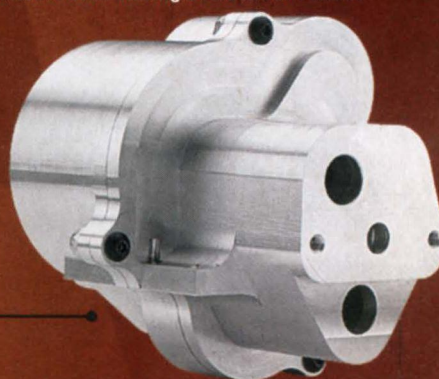
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T-Maxx Vented Flywheels



Aluminum vented flywheels move air over clutch bell, improving performance and cooling. RRP 8551 Blue, RRP 8550 Natural Silver

Forward ONLY Racing Gearbox For T-Maxx



Precision CNC machined from aircraft grade aluminum this Forward ONLY Racing Gearbox will give your T-Maxx a serious competitive edge. RRP 8595

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TROUBLESOME MICRO WHEELS

I have a problem that's about to drive me to the funny farm. I purchased a complete set of GPM Delrin rims, firm molded inserts and P-30 treaded tires for my HPI Micro RS4. The front rims fit the car just fine, but for some reason, the rear rims don't work with my HPI ball diff. It's as if the threaded portion of the stock rear axle is not long enough for me to install the two washers, O-ring and locknut that are required to adjust the ball diff. I called the hobby shop that sold me the wheels, and they said that the parts should work fine. Either I bought a defective set of rims, or the hobby shop is giving me bad advice. What should I do?

Jim Wallace
Browns Mills, NJ

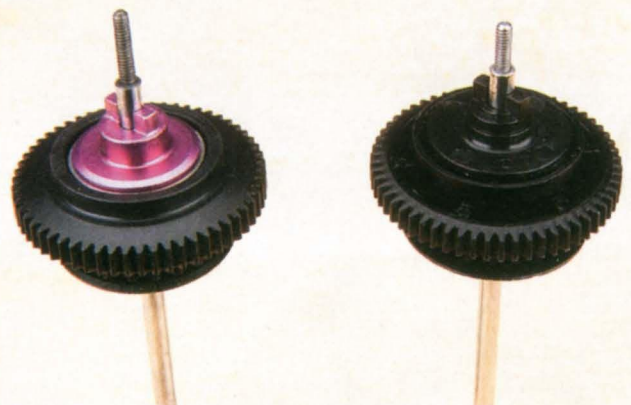


Left: the stock Micro RS4 uses a two-piece wheel and an adjustable hub set (left) to allow front and rear track adjustment. The GPM wheel (right) is a one-piece design, so front and rear track adjustments are not possible.

Below: as you can see, the threaded portion of the Megatech rear axle (left) is different from the stock HPI axle (right). The GPM axle is identical to the Megatech unit, so it doesn't matter which ball diff you buy; they'll both accommodate one-piece wheels such as yours.

Sorry to be the bearer of bad news, Jim, but the one-piece wheels that you bought are not designed to work with the HPI ball diff. These particular wheels can be bolted onto a Micro RS4 with the stock gear diff or a Micro RS4 that's equipped with the GPM or Megatech ball diff, but they aren't for a Micro that's equipped with an HPI ball diff.

The GPM and Megatech ball diffs include a different rear axle that must be used in place of the stock axle. I ordered a set of these wheels for a project that I did for our *Radio Control Micros & Minis* special issue, and I discovered this right away.



RS4 Nitro Aluminum Brake Kit



Lightweight aluminum, variable braking system. RRP 1575

RS4 Nitro Vented Flywheel



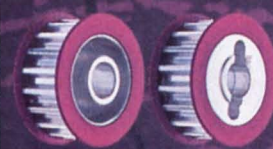
Aluminum vented flywheels move air over clutch bell, improving performance and cooling. RRP 1570 RRP 1571 Pull Start

Stealth Sedan Spurs



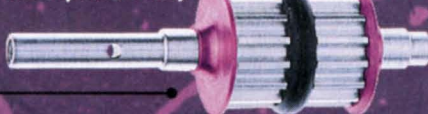
These precision machined spur gears are super quiet. They're available in 48P in 60T thru 96T sizes, and fit any HPI electric car or truck. RRP 1860 thru RRP 1896.

RS4 Nitro Small Aluminum Drive Pulleys



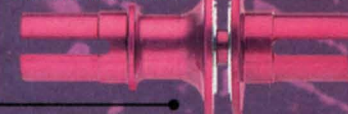
Hardened drive pulleys, sold in pairs. RRP 1538

RS4 Top Shaft Pulley



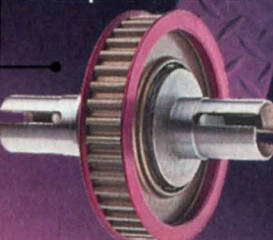
One piece pulley and shaft are precision cut and hard anodized. Purple anodized side flanges are pressed on. RRP 1527

RS4 / Pro / Pro2 / Nitro Aluminum Outdrives



40% lighter than stock ball diff outdrives. RRP 1585

RS4 Complete Ball Diff Units



Hardened steel outdrives, ground and polished thrust washers, 2 5x8mm ball bearings, and aluminum pulley. RRP 1590 Electric RRP 1595 Nitro

RS4 Diff Pulleys



Precision machined, hard anodized aluminum diff pulleys. RRP 1539 nitro sedans RRP 1528 electric sedans

RS4 Nitro Lightened Gear Adapter



This lightened gear adapter includes a machined nylon spur that's tougher than the stock gear and will last longer. RRP 1535

www.robinsonracing.com

RS4 Nitro 32 Pitch Conversion Kit is available. RRP 1536



Above: apply a light coat of silicone glue to the screws before you thread them through the chassis and into the diff cases. **Right:** you can also replace the self-tapping screws with machine screws of the appropriate size. Be sure to put a couple of drops of CA in the diff cases' screw holes so that new threads will be cut when you thread in the machine screws.



STUBBORN DIFF SCREWS

I love my Kyosho Inferno MP 7.5 Sports, but for some reason, the screws that secure the front and rear diff housings to the chassis loosen during every run. I applied liquid thread-lock to the screws, but they are still loose after a few runs. I've already had to replace three screws because they fell out. Is there any way to prevent this from happening?

Geoff Parks
Tulsa, OK

You can do a couple of things; the easiest solution is to apply silicone glue to the screws before you thread them through the chassis and into the molded diff cases. The screws will stay in place yet will be easy to remove for maintenance. You can also put a few drops of CA in the diff cases' screw holes. When the glue has dried, replace the 3mm self-tapping screws with 3mm machine screws. The CA fills the gaps between the threads in the molded plastic, and new threads will be tapped when you install the machine screws.

TOOLBOX

Kyosho Mini-Z Tool Set

Kyosho offers a small, five-piece tool set for Mini-Z owners. A 5.5mm hex wrench that's perfect for removing wheel nuts and a no. 0 point Phillips screwdriver that correctly fits the hardware on a Mini-Z will likely be the two most used tools. For those of you who like to customize your rides, three drill bits—2, 2.5 and 3mm—are included, each mounted in its own handle. Each tool is constructed of steel with a grooved shaft for a nonslip grip. A plastic case with a molded foam insert keeps the tools in order.

Item no. MZW100; \$24.99.

Kyosho; distributed by Great Planes Model Distributors (800) 682-8948; kyosho.com.



NEED HELP?

Send your "Troubleshooting" questions and comments to George M. Gonzalez, georgeg@airage.com.

RC10-GT Steel Combo



Precision machined from solid steel, then hardened, this 65T spur and 15T bell combo will last and last. The extra-hardened clutch bell fits ALL Associated and MIP shoes. RRP 2365

www.robinsonracing.com

Hardened Steel Idler Gear



Cut from solid steel stock, this gear is lightened and hardened for super quiet precision and extra long life. Jammin' tranny grease is included. RRP 2213 RC10-GT, RRP 7505 Ultima GP-R

Associated Titanium Stealth Top Shaft



CNC Machined from solid titanium, this super hard, super light top shaft will fit any Stealth transmission. RRP 1512.

Hardened Diff Gear



Hard anodized, precision CNC machined aluminum diff gear. RRP 1513 RC10-GT RRP 7500 Ultima GP/EP-R

Blue Lightened Slipper Kit



The rear plate is hard anodized and the front plate is color treated. The front plate holds the pad forcing it to slip on the rear plate. When pad wears, just flip it over for a new surface. RRP 1515 Associated, RRP 7515 Kyosho Ultima

Aluminum Outdrives



40% lighter than stock ball diff outdrives. RRP 1475 TC3, RRP 1502 B3/T3

TC3 Ultra 48 Pitch Spurs

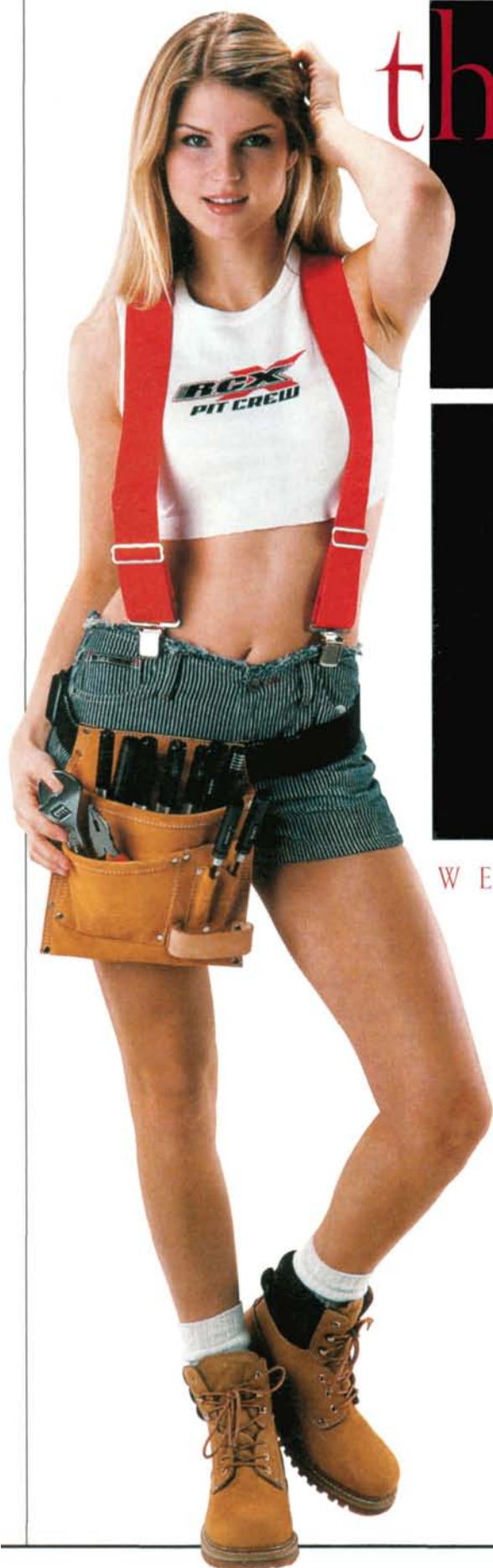


Precision machined from heat-resistant plastic, these spurs mesh flawlessly with our pinions. Available in even numbers from 70T thru 80T, RRP 1670 RRP 1680.



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the **LUST** **LIST**

WE KNOW WHAT YOU WANT

We're all for track camaraderie, the rewarding building sessions and all the swell educational benefits, but there's exactly one reason why we love RC so much: it's the stuff. There's always new gear to crave, especially at this time of year. What better time to announce our first ever Lust List? It would take more pages than we could ever fit into the mag to show you all the gear we're lusty for (because we want it all), but here are the biggies that we hafta have.

BY THE RC CAR ACTION TEAM • PHOTOS BY WALTER SIDAS & PETE HALL

Team Losi Triple-X4

The Losi guys pretty much rescued electric 4WD off-road from oblivion with the Double-X4, and now the Triple-X4 is set to stir up the 4-wheel scene again. A single-belt drive train and an easy-to-wrench-on chassis inspired by the Triple-XS touring car are the stars of the show. Based on our "First Drive" (see page 118), the Triple-X4 will be the all-wheeler to beat!

Item no. LOSA0014 \$270



Team Trinity D5 Flatliner

One thing is certain: Trinity's newest mod motor won't be delivering any flat lines on the dyno. The D5 Flatliner uses FlatWire technology (which relies on flat wire—surprise!) to give the armature a lower polar moment of inertia for quicker acceleration. The big-brush setup proven by the P-94 mods has returned, and a new endbell caps the D5. The endbell is extra trick; instead of burying the capacitors under the endbell hardware (where they're easily lost during disassembly), the three caps are soldered to an external circuit board for glitch resistance and easy inspection.

Item no. varies with wind \$95



JR R-1 Pro

According to JR, the new R-1 Pro's FPPM fast frame-rate modulation "gives the racer an almost telekinetic link with his car, truck, or boat." You can't get any better than telekinesis! All of the standard R-1's features return with the Pro model, which also features snazzy gold trim, making this Nelly's favorite transmitter.

Item no. varies with included equipment \$340-\$390



Traxxas TRX 2.5

There aren't many original-equipment RTR engines we would choose as aftermarket mills, but Traxxas' new TRX 2.5 is a high-rpm screamer that's worth transplanting into any small-block nitro machine. Want proof? Just by dropping this new powerplant into the latest T-Maxx, Traxxas got an extra 10mph (and then some) out of the big truck. Traxxas has also sped up the Nitro Rustler and 4-TEC with the TRX 2.5. The rear-exhaust, 2-needle powerhouse will be available in versions to suit all small-block applications.

Item no. 5207 (pull-start) \$150



Trinity Sirio SP .21 BR Pro

It's only the most powerful engine that has ever been strapped into the *RC Nitro* dyno and, of course, it has all the hottest features, including a composite slide carb, aluminum sleeve, pure-race porting and more (the December 2002 *RC Nitro* has all the details and dyno notes). Italy, baby; those guys know engines. Vespa scooters, Fiat cars and Malagutti mopeds—all Italian! Oh yeah; there's also some sports-car company named Ferrari over there in boot land.

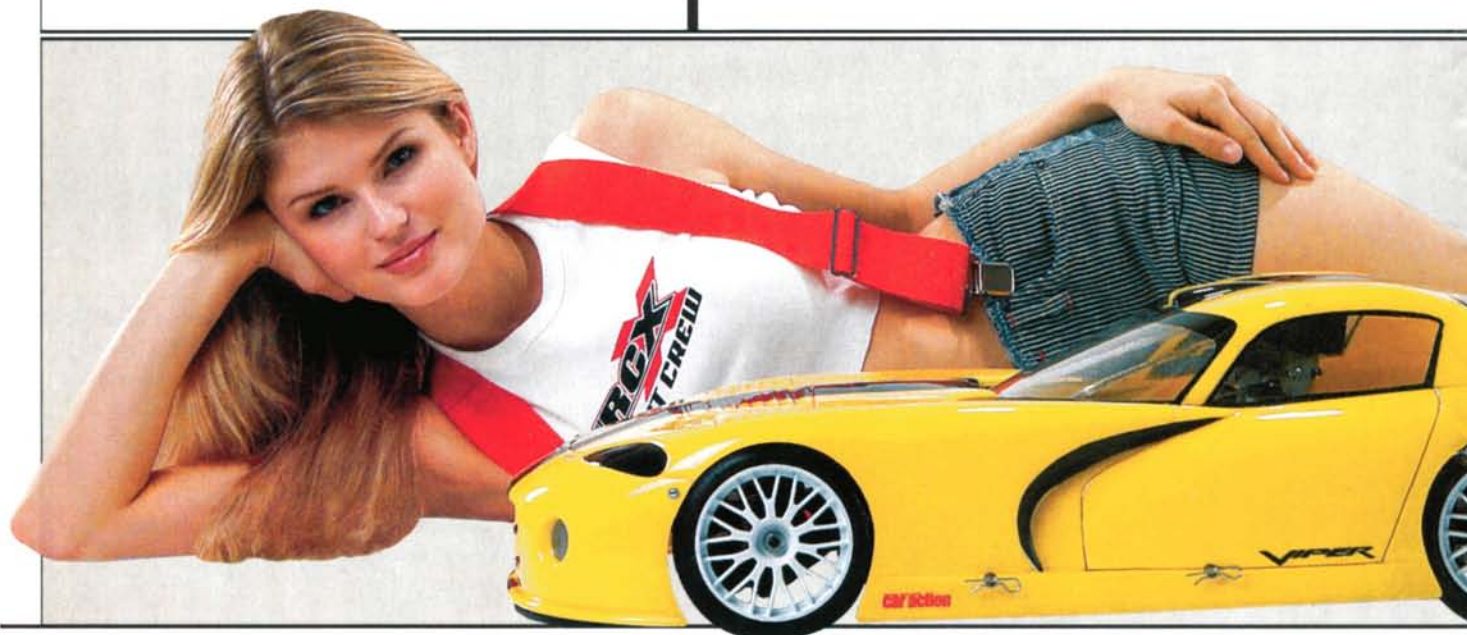
Item no. SP21BRPRO \$350



HPI Nitro RS4 3 Type SS

We like HPI's Nitro RS4 3 RTR, but it's the Type SS version that we lust for. It's a kit, so you get all the benefits of building your own (you know it's done right, you aren't stuck with a factory setup, and it's just fun to build), and the Type SS packs extra racing specs. A 2-speed transmission, tubular exhaust manifold and turnbuckles are nice touches, but the best bonus is the fire-breathing Nitro Star .12SS engine. Combine race-ready power with standard RS4 3 features such as an easy-out radio tray with enclosed receiver and battery compartments and goof-proof shaft-driven 4WD, and you have a recipe for nitro lust.

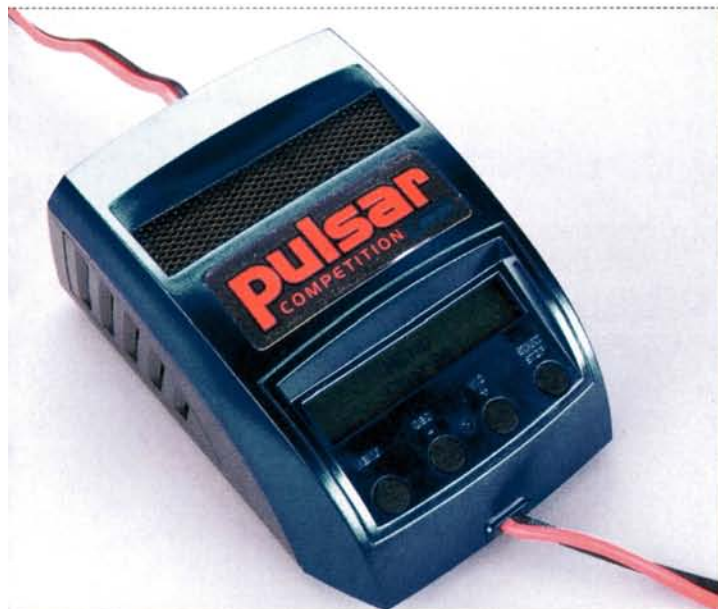
Item no. varies with body style \$300



Associated B4

It doesn't exist yet (except for the one-off mock-up shown here), but how could we not lust after a new addition to Associated's legendary RC10 series? The B4 brings way too many new features to the table to list here, but the biggies include a new double-sided slipper clutch, revised 2.6:1 Stealth tranny, lengthened MIP CVD drive axles, new-design wheels (interchangeable with other buggy brands), and an a super-low-CG chassis with computer-optimized suspension and steering geometry. Whew!

Still too new for an item number \$200 (estimated)



LRP Pulsar charger

Easy to use, charges anything and has a cool blue LED. That's enough to make the LRP's new charger lust-worthy, but it gets better: the Pulsar discharges and cycles packs up to 10 amps, alerts you if a charge is interrupted and can be used to power motors for break-in or to run a lathe or electric brush cutter. Pretty cool, eh? Flip to page 246 for a complete review.

Item no. LRP4155 \$180

HARM 1/5-scale RTR

We can't call this HARM 1/5-scale ride "inexpensive" at \$1,500, but for a big car, the price is actually low—especially when you factor in such RTR niceties as a fully painted body, a 23cc Solo engine and the included JR Racing XR3 FM radio system complete with a Hitec



HS700BB Giant-Scale servo and 1700mAh receiver pack. The big rig is available in three flavors: Mercedes CLK DTM, Opel DTM and Outlaw truck. Great; so where did the Viper come from? It's an optional body, and almost as curvy as our pit crew chief.

Item no. HRE15310301H \$1,500

ONE OF EACH, PLEASE. It's our Lust List, and we feel no need to limit our lasciviousness (look it up) to just one truck. Of course, we want all the latest monsters, but here are our top five.

TRUCKS



XTM X-Factor

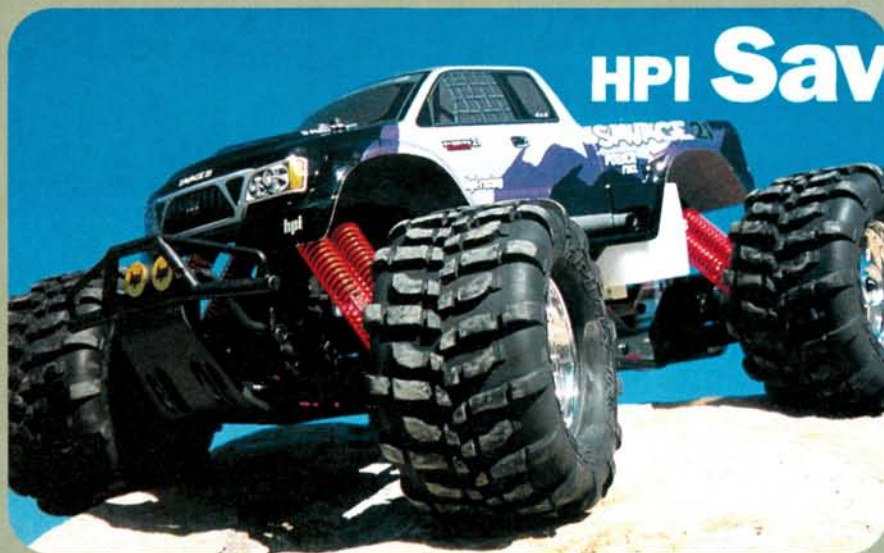
XTM's first ever nitro monster lands on the Lust List by virtue of its king-size .247 engine and its real-monster-type 4-link solid-axle suspension. The X-Factor's 2-speed tranny with reverse and the R-Box electronic brake/reverse mixer help, too! Flip to the full "First Drive" report on page 110 for all the tech details.
Item no. 145641 \$450 RTR

OFNA Titan

So big. So powerful. So ... orange. How could we resist the Titan? We can't. With its extra-large .25 engine, steel-gear transmission and high-riding chassis, the Titan makes us want to loosen our wallets for some of its orange juice.
Item no. 34219 \$750 RTR



HPI Savage 21



The Savage is arguably the most unique-looking monster truck thanks to its arched, aluminum ladder-style chassis, and with its ooey-goey, super-long-travel suspension, the Savage 21 should absorb rough terrain like a new soldering-iron sponge taking its first dip in the sink. Big-block Nitro Star power is routed through a 2-speed, slipper-equipped tranny on the way to the wheels (reverse is optional), and the Savage is sold RTR. We want one. Now.
Item no. 831 \$450 RTR



Traxxas T-Maxx

It was a big surprise when Traxxas announced that its new T-Maxx wouldn't have a .21, but it was an even bigger surprise when the new truck posted big-block-beating speeds that were over 40mph! We also appreciate the T-Maxx's new, wider suspension, updated graphics and beefed-up EZ-Start, but it's that high-revving rear-exhaust TRX 2.5 engine that really pegs the lust needle.

Item no. 3910 \$400 RTR

Team Associated Monster GT

We're still waiting to test-drive one of these bad boys, but it's still high on the Lust List. Sure, it has lots of features—a 2-speed, reverse, eight shocks, Thunder Tiger .21—but the big draw is its sheer bigness: at 22 inches long with 5.75-inch-diameter tires, the Monster GT is the biggest monster you can buy! And it's an Associated, so you know it's gonna rip.

Item no. not yet determined \$500 RTR (estimated)





Tamiya F201 Original Bodies kit

The F201 has lots of swell features (4WD, shaft drive, realistic inboard suspension ...), but let's get right to the Lust Factor: the faux carbon-fiber body. Go ahead—blow off the cable bill and live on ramen noodles for a couple of weeks; you need this kit. There's a clear body in the box, too, and Tamiya also offers the F201 with a Ferrari body.
Item no. 58294 \$200

Team Orion V2 Modified

Round brushes? Contacting the commutator on an angle? In an aluminum endbell, with a cooling fan? Orion's V2 Modified concept sounds crazy to us—crazy fast, we bet. In addition to the innovative new stuff, the V2 mods include



Orion's surface-mounted capacitors along with a clamped-in Schottky diode.

Here's the part we really like: you don't have to solder the power wires. Instead, setscrews clamp the wire in the endbell for a full-contact fit without solder. Hey, we're lazy.

Item no. varies with wind \$95
(cooling fan optional)

OFNA 9.5 MBX

The new 9.5 MBX is feature-filled in the usual OFNA way. Pivot-ball suspension all around, hot orange anodizing and the same mondo-big .25 engine as OFNA's Titan monster truck. This buggy should be powerful with a capital POW, and with its super-hot factory graphics (part of a complete RTR package), the 9.5 MBX makes us lay on the lust.
Item no. 34955 \$515 RTR





Serpent 705

Thank you, Serpent; were it not for your original Impulse nitro tourer, we'd probably all be driving warmed-over electric sedans masquerading as nitro cars. Serpent got the on-road-tech, pivot-ball bandwagon rolling and is back with a new ride. We want it: the 705. New stuff includes: a carbon-fiber radio plate, shock towers and chassis stiffeners; a 7075 T6-aluminum chassis; an ultralight, 2-speed gearbox; a Centax II clutch and a gang of other go-fast goodies. And it's a Serpent—always good for the RC lust factor.

Item no. 801040 \$380

Futaba 3PK

According to Futaba's slide-rule guys, the new 3PK can transmit and receive signals (when equipped with a



proprietary receiver) twice as fast as other pro radios. But even if you lack Jet Li reflexes to exploit the speediness, the 3PK is still highly lustable for its rear-facing, dot-matrix LCD screen, simple southpaw conversion, everything-but-the-kitchen-sink adjustability and easy-to-use software. It's way easier to get around the new 3PK's memory banks than the old 3PJ's.

Various item nos. \$320-\$360



TOOLS



Team Kinwald Carbon Tech wrenches

Check it out: they're carbon fiber. So, do we really need to explain why these are lust-worthy? The trick zip-up case is included, and Trinity offers metric and standard hex drivers as well as a nut-driver set. A carb-tuning screwdriver and suspension pivot-ball driver are also available. Various item nos. (four drivers with case) \$85-\$118

Parma F1 airbrush kit

If you're gonna spray your own, a good airbrush is a must-have. Parma has a great one: the F1. In fact, our

resident paintophile, Bob Hastings, raves about it in this month's "Body Shop"; see page 288 for details. Item no. 40260 \$110



Hudy Precision tools

Hudy's original luxu-tools are still some of the best, and some of our favorites—especially with the engrave-your-name option. Hardened spring-steel shafts, ultra-precise tips, lightweight hollow handles that have been knurled for grip; it's all good. Just give them to us. Screwdriver, hex driver and nut drivers are available, plus a reamer and manifold-spring yanker. Various item nos. \$11-\$25



XTM X-Terminator

There are other RTR 1/8-scale buggies out there, but none like the XTM X-Terminator. Its angled servos and radio box, and the conservative cool gray anodizing give it a different look from any other big buggy, but the details make XTM's first ever buggy a lust-winner. The plus-size XTM .247 engine is the most obvious detail, and silicone axle boots, O-ring-sealed diffs, full-braced chassis and rear roll bar are the more subtle touches. See the complete review on page 164.

Item no. 32329 \$450 RTR

Novak GT7

The GT7 delivers all the usual Novak features (like Polar Drive Circuitry, external solder posts, and One-Touch Set-Up), and you can access many of the unit's performance parameters directly—no Pit Wizard programming unit required. That's all lust-worthy stuff, but we're most in love with the GT7's trick capacitor bracket and snap-on switch. The less servo tape we deal with, the better.

Item no. 1785 \$140



Tamiya Full Option Tanks

Ten-hut! Tamiya tanks really blow us away. Get it? That's good comedy. In addition to the Sherminator, Tamiya's tank lineup includes the Tiger I, King Tiger and Pershing models for all the Axis-versus-Allies fun you can handle. The Full Option package adds articulated guns with recoiling barrels and rotating turrets, plus authentic real-tank audio recorded from the actual vintage fighting machines. It gets better: Tamiya's Battle System lets the tanks duke it out with infrared ammo! Consider these tanks to be the ultimate "Saving Private Ryan" playset.

Item no. 56014 (Sherman) \$500; 56010 (Tiger 1) \$700



Trinity Sanyo 3000mAh VIS-matched Team pack

With a name that long, these cells must be good. A stick pack of the new super-cells will give you nitro-rivalling run time for play, but



since we're in lust mode, we want Trinity's best matched cells for the highest voltage and maximum punch.

Item no.
SNT3306
\$100



Kyosho Mini-Z Mach 5

Those of you who are old enough to remember the old "Speed Racer" cartoon are already lusty for this Mini-Z! Speed's incredible Mach 5 was the work of Pops Racer (not to be confused with Pops Losi), and it could ride on two wheels, leap into the air and deploy nose-mounted saw blades. Kyosho's version doesn't do all that stuff, but it's plenty cool enough just scooting around the kitchen.

Item no. **30200B** **\$140**

AQUA MEN

We're car guys through and through, but it's not like we signed a contract to never look at boats. Take a look at these wet rides—just for the hull of it.



Megatech Ocean Explorer 1

It's usually a bad thing when your RC boat sinks to the bottom, but Megatech's Ocean Explorer 1 is supposed to sink, so it's OK. A pair of thrusters gives the palm-sized sub surprisingly precise control, and the three functional headlights are perfect for nighttime aquarium exploration.

Item no. **MTC7702** **\$100 RTR**

Pro Boat Miss Budweiser RTR

Ooh, so red, so fast, so nitro-powered. Pro Boat's fiberglass-hull Bud boat is 1/12 scale (about 28 inches long), and plans are afoot for an even bigger 1/8-scale monster. The Miss Bud is sold totally ready to run, right down to its JR Python radio system and Dynamite .15 marine engine. Admit it: you want one.

Item no. **PRB2200** **\$300 RTR**



CEN Wave Shark

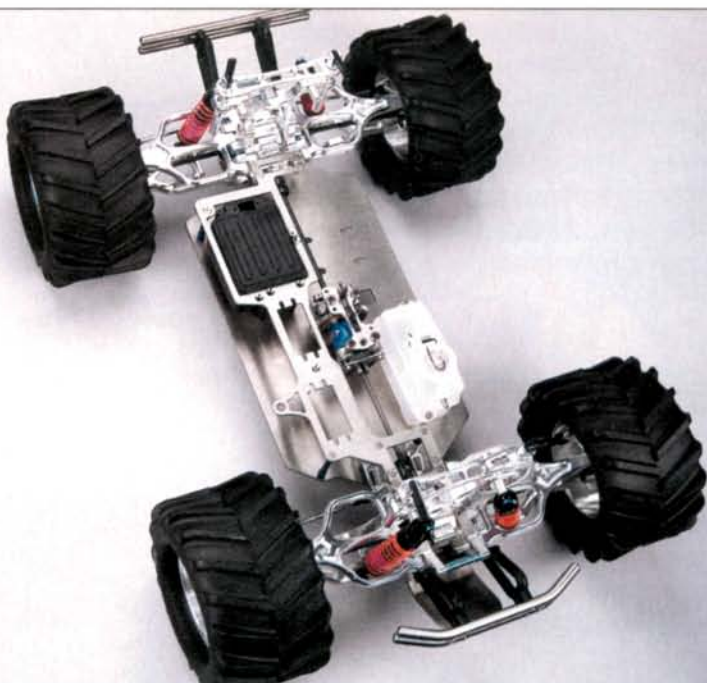
The CEN Wave Shark is big (more than 2 feet long), jumps waves like the real thing and tears along a lot faster than you would expect thanks to its water-cooled NT-16 pull-start engine. Radio gear is included and installed. The rider figure is also part of the package, so you won't have to raid Toys "R" Us only to wind up with Malibu Ken at the controls.

Item no. **2056** **\$280 RTR**



Airtronics **MX-3**

Wait; shouldn't we be lusting for Airtronics' best radio—the M8? Well, yeah, we want one of those too, but man, the MX-3 has everything you need for less! The easy-to-navigate digital display gives you access to expo, endpoints, subtrims, servo rates and other stuff. Best feature: you can turn the sound off! Woo-hoo!
Item no. 90511 \$110



Hardcore **Mutant Maxx**

Sorry, T-Maxx fans; if you thought your purple-aluminum-everything ride was the ultimate Maxx, you've just been played. Hardcore's got the pure performance setup with the titanium-fortified Mutant Maxx; it brings .21 power (you supply the engine) and a buggy-style, in-line drive train with center diff to the Traxxas giant killer. All the heavy bits are now on the bottom chassis plate for superior race-day handling. Badass.
HCR-0361 \$240



Team Losi **Triple-XS Graphite Plus**

We always lust for Team Losi's "G-Plus" rides, and the Triple-XS is the latest. We're already fans of the car for its simple chassis layout, easy-access, large-diameter diffs, whisper-quiet mono-belt drive system and quick handling, but when you add Losi's graphite parts, threaded shocks with ti-nitride shafts, MIP aluminum CVDs and Losi's new Alfa body ... well, there's no holding us back.
Item no. LOSA0251 \$270

OFNA **Raser Scooter**

All the fun of a moped, without looking like a giant tool! OFNA's Raser can easily outrun Grandpa's Rascal, thanks to 40cc of 2-stroke power and no-maintenance belt drive, and it stops hard on front and rear drum brakes. It's suspended, too; there's a plush mono-shock in the back and a telescoping fork up front. OFNA plans to offer go-fast parts for the donut-wheeled cop annoyer, but even in stock trim, it's good for about 25mph. Sure beats pedaling.

**Item no.
91040
\$500**



Schumacher Fusion

It's a 1/10-scale touring car with a .21 engine. If you do the math, that's the same power-to-weight ratio as, uh, something really light with a giant engine in it. Too much power? Probably. Do we want one? Definitely. A 3-speed tranny and Thunder Tiger .21 engine are standard, and two sets of gears allow you to set up the Fusion for easier drivability or a ballistic, crush-your-friends top speed. RTR kits include an Airtronics Blazer radio system and glow starter; a no-radio, assembled kit version is available, too, with your choice of a BMW 328i, a Subaru WRX and an F-155 truck body.

Item no. varies with body style \$450 RTR



Thunder Tiger FM1e

Bikes, baby! You can't say "No" to this Yamaha R1-flavored RC bike. Aluminum construction, single-sided swing arm with monoshock, real chain drive—how cool is that? Painted Lexan bodywork and vinyl rider dude are included, and it's easy to drive! Just add your full-size radio gear and 540 motor—no special equipment required.

Item no. 6529-F \$250



Team Orion Micro chassis

There are a bunch of Orion chassis variations to help you dial in your Micro RS4, but they all have the same features in common: graphite and aluminum construction, factory assembly and a trick tubular package. You can get the chassis with and without a bolt-on motor-cooling fan (c'mon; you gotta get the fan!).

Various item nos.

\$50



Hot Bodies Tornado

We haven't driven this one yet, but it sure looks like a hot RTR. Check the specs: a 2-speed tranny, tuned pipe, ball bearings and painted body are all standard, along with a competition-style pivot-ball suspension and 3-belt drive train. A fuel bottle, glow starter, AA batteries and plug wrench are part of the RTR package, too. Nice!

Item no. HB55100 \$336 RTR



Kyosho GunWalker

It isn't a car, but if you're into RC and giant mecha, the GunWalker is all you. The big 'bot's electromagnetic feet clamp its thunder thighs to the included steel "combat field" for sure-footed walking action, and a red LED "eye" glows menacingly from the head. Kyosho's crack engineers handled the tech details, but RoboTech/Macross designer Kazutaka Miyatake gave the GunWalker its anime-licious look. Guns and battle knife included—for extra violence!

Item no. 35201DYB \$160



XRAY Evo 2

Ah, the XRAY. Classic carbon-fiber and aluminum construction in a 2-belt tourer doesn't get any classier than this, especially in Evo 2 trim. This follow-up to the T1 is even more adjustable than its predecessor, and it has an option to run a saddle pack or 6 cells along the belt. One thing that hasn't changed from the T1 is the Evo 2's high quality; it features some of the finest machining and finishing work in RC.

Item no. 300002 \$330



Pro-Line 40-Series wheels & tires

More rim, less tire. That's the idea behind Pro-Line's 40-Series wheels and tires. The 40s are a full inch wider and taller than stock Maxx wheels for a low-profile sidewall with no pooch-out. Pro-Line's Velocity 6 and Outback wheel designs are the first to get 40-fied, and there are currently two 40-size tires to choose from: the popular Road Rage pattern and the new Big Joe off-road tread. Both are molded in M2 rubber and include Impact foam inserts.

Various item nos. \$22 (wheels/pair), \$33 (tires/pair)

DuraTrax Nitro Evader ST

DuraTrax is hardly new to nitro, but the prolific RTR producer has never tackled a race-flavored fuel burner until now. The Nitro 'Vader looks good to us, and with its O.S.-built DTX .18 engine and 2-needle carb, it just might be the fastest nitro RTR stadium-style machine yet. Like the electric Evaders, the new nitro machine is full of additional features—aluminum header and tuned pipe, threaded aluminum shocks, slipper clutch, steel turnbuckles, full bearings and CV-style drive axles, to name a few.

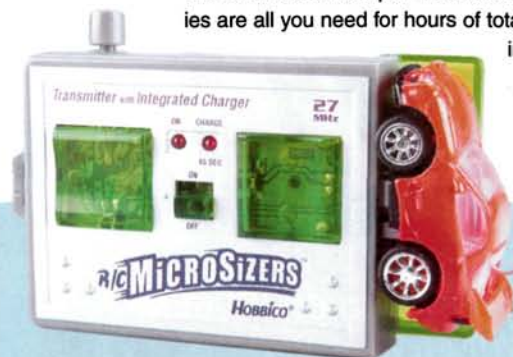
Item no. DTXD62 \$300 RTR (estimated)



Hobbico MicroSizers

We originally thought of the MicroSizers merely as neat RC novelties, but dang if we didn't get ourselves hooked on the little guys. They're surprisingly quick, easy to customize, pocket-portable and—best of all—super inexpensive. Each tiny car snaps onto its transmitter for charging and runs for two to three minutes per 45-second charge. Just 2 AA batteries are all you need for hours of total run time! Six body styles in 12 colors are available.

As the saying goes,
"Collect 'em all!"
Item no. varies
with body style
\$30



TRC Micro Foams

Carpet is the track surface of choice for many micro fans (including us), and nothing shakes up shag like four foamies. TRC's foam tires for the HPI Micro RS4 earn our Lust List seal of approval with their high-grip pink and magenta compounds and bright chrome dish wheels; for extra tunability, two widths are offered: 14mm and 17mm. Various item nos. \$10/pair



Mugen MRX-3

Who wouldn't want a 1/8-scale on-road car, and who wouldn't want that car to be the reigning world champion? Certainly not us, and that's why we're lusting for Mugen's MRX-3. From its carbon-fiber top deck and shock towers to its quick-release wheels and 5mm 7075 chassis, this thing is full-race.

Item no. H0060 \$900

S O U R C E S

AIRTRONICS (714) 978-1895; airtronics.net.

CEN/GENKA TRADING CORP. (714) 792-1923; cenracing.com.

DURATRAX distributed by Great Planes Model Distributors Co.; duratrax.com.

FUTABA distributed exclusively by Hobbico/Great Planes Model Distributors Co. (800) 682-8948; futaba-rc.com.

GREAT PLANES MODEL DISTRIBUTORS CO. (800) 682-8948; greatplanes.com.

HARDCORE RACING COMPONENTS (661) 294-5032; racinghardcore.com.

HARM distributed by Horizon Hobby Inc.; (800) 338-4639; horizonhobby.com.

HOBBICO/GREAT PLANES MODEL DISTRIBUTORS CO. (800) 682-8948; hobbico.com.

HORIZON HOBBY INC. (800) 338-4639; horizonhobby.com.

HOT BODIES (909) 296-9340; hotbodiesonline.net.

HPI RACING (949) 753-1099; hpiracing.com.

HUDY SPECIAL PRODUCTS distributed by Serpent Inc. USA; hudy.net.

JR RACING distributed by Horizon Hobby Inc.; (800) 338-4639; horizonhobby.com.

KYOSHO distributed by Great Planes Model Distributors Co.; kyosho.com.

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MEGATECH INTL. (201) 662-8500; megatech.com.

MUGEN USA (949) 707-5607; mugenracing.com.

NOVAK ELECTRONICS INC. (949) 833-8873; teamnovak.com.

OFNA RACING (949) 586-2910; ofna.com.

PARMA/PSE (440) 237-8650; parmapse.com.

PRO BOAT distributed by Horizon Hobby Inc.; (800) 338-4639; horizonhobby.com.

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SERPENT INC. USA (305) 639-9665; serpent.com.

TAMIYA AMERICA INC. (800) 826-4922; tamiyausa.com.

TEAM ASSOCIATED (714) 850-9342; teamassociated.com; rc10.com.

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TEAM LOSI distributed by Horizon Hobby Inc.; (800) 338-4639; teamlosi.com.

TEAM ORION INC. (714) 694-2812; team-orion.com.

THUNDER TIGER/ACE HOBBY DISTRIBUTORS (949) 833-0088; thundertiger.com.

TRAXXAS CORP. (888) 872-9972; traxxas.com.

TRC distributed by Trinity Products Inc.; (732) 635-1600; teamtrinity.com.

TRINITY PRODUCTS INC. (732) 635-1600; teamtrinity.com.

XRAY distributed by Serpent USA; teamxray.com.

XTM RACING distributed by Global Hobby Distributors (714) 964-0827; globalhobby.com.



by Kevin Hetmanski

XTM

JUST PLUNGED INTO the ready-to-run $\frac{1}{8}$ -scale-buggy world with its new X-Terminator (reviewed in this issue), so if I told you that XTM also had a new big-block monster truck, you'd probably expect it to feature the X-Terminator's buggy chassis and suspension combined with a set of chevron-tread tires and a truck body. That would be an easy way to put together a nitro monster, but XTM has much bigger plans for its first monster truck, the X-Factor. Its most obvious feature is its four-link, solid-axle suspension, which is just like the setups used by full-scale monsters (and completely unlike any other RC nitro monster truck's). The suspension alone would be enough to make the X-Factor an exciting entry to the big-block monster scene, but there's more: XTM's home-grown 24-7 engine provides bigger than .21 power, and the new XTM R-Box electronic mixer gives the X-Factor fully proportional forward/reverse/brake control without a 3-channel radio or complex linkage system. Interested? There are many more trick details to get to, so let's keep moving. I want to get to the part where I drive it!

XTM Racing X-Factor



MARKS THE SPOT



PHOTOS BY WALTER SOGAS

FIRST DRIVE >>

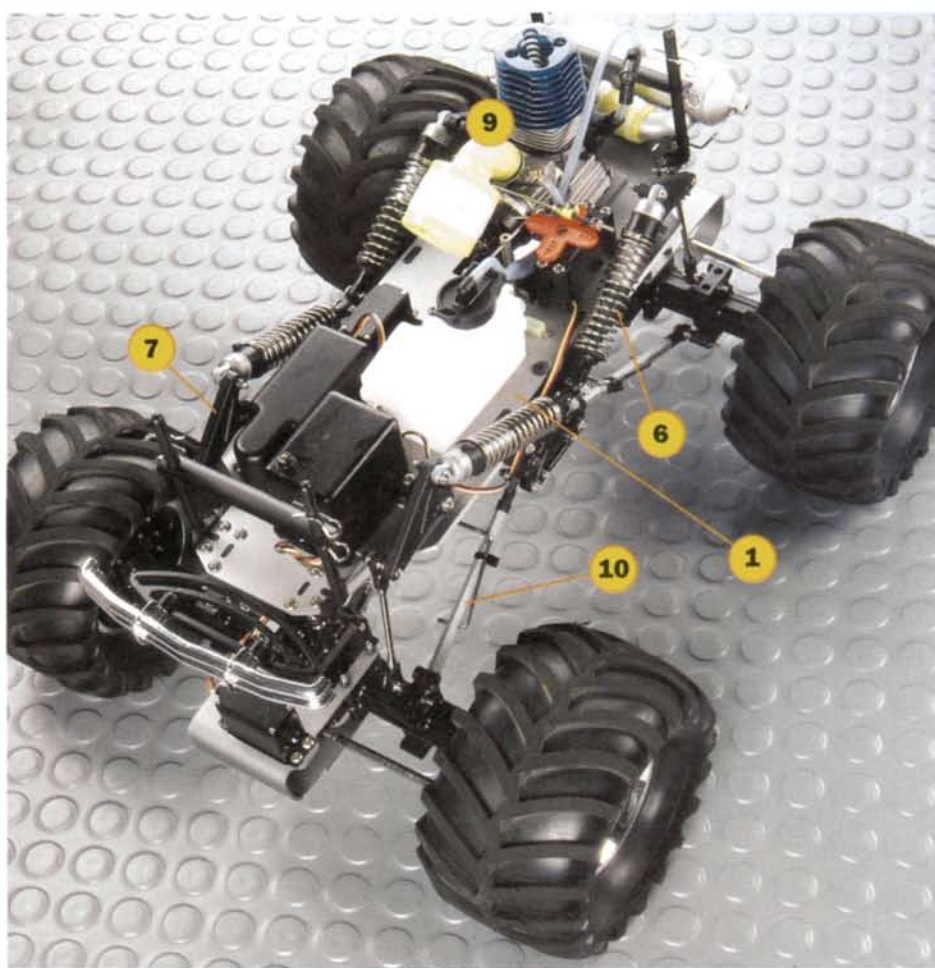


DRIVING THE X-FACTOR

I used the XTM 24.7 engine for my XTM T-Maxx big-block conversion review (see the August 2002 issue), and because of that experience, I expected the X-Factor to have a lot of low-end rip. Got that right; the X-Factor lit up all four chevron sneakers as I buried the trigger in the grip. First gear winds out quickly, but there's more speed on tap when second gear kicks in and the X-Factor touches 35mph. There's definitely room to gear up for more velocity, but low gearing suits the truck well. It allows the X-Factor to wheele effortlessly, and it keeps acceleration brisk; blasting to 30mph quickly is more exciting than driving a tall-gear truck that tops out at 40 but takes forever to get there.

It takes a big bunch of grab to stop 12 pounds of truck, but the X-Factor's dual-disc brake handles the job well. There's enough power for safe stopping and a smooth feel at the trigger.

The X-Factor handles well for a high-riding truck; there's much less chassis roll than I expected, thanks to the thick front and rear swaybars and an overall stiff setup. This roll-reducing stiffness comes at the expense of bump-handling though; the X-Factor's suspension was much less active than it would be if it had softer springs and less damping. After years of monkeying with 4-link trucks, I can confidently say that you shouldn't have any trouble tuning the X-Factor for plush articulation and long travel. But it might not require such tuning; the XTM guys plan to soften the suspension.



FEATURES

» XTM X-Factor

1 3MM ALUMINUM CHASSIS. The gray-anodized main chassis is a 3mm-thick aluminum plate that has radiused sides to enhance rigidity. A large central opening allows the top of the transmission to poke out so that the spur gear can mate with the clutch bell on the engine. Cutouts in the chassis' sides make room for the 4-link bars and shocks. Two plastic side plates hang below the main chassis, and the sides of the tranny and suspension are mounted on them.

2 2-SPEED TRANSMISSION WITH REVERSE. The X-Factor is equipped with a finger-type 2-speed tranny and user-shifted reverse. Access to the 2-speed adjustment is on the side of the gearbox. To engage reverse, a servo-actuated wire lever moves a cog along the output shaft to disengage the forward gear set and engage a counter gear. The reverse and forward spider gears are made of steel so they won't be stripped.

3 SLIPPER CLUTCH. A dual-disc slipper clutch protects the transmission gears from damage; with all the leverage a big set of chevron tires can apply to a drive train, the slipper is an important feature. The X-Factor's steel spur gear is sandwiched between two composite slipper pads and two steel slipper plates. A firm spring keeps tension on the assembly.

4 TELESCOPING DRIVE SHAFTS. Instead of dogbones, XTM opted to use telescoping drive shafts to connect the tranny to the axles. Both ends of the drive shaft feature rebuildable universal joints. They are joined in the center by a steel sleeve that allows the axle to telescope with suspension movement. The coupling also captures the axle halves to prevent them from separating if one end of the axle is disconnected from the drive train.

5 1/2-SCALE-TYPE SEALED DIFFERENTIALS. Steel-gear, buggy-type sealed differentials housed in the front and rear axles come packed with grease. You can fill them with silicone fluid to tune their action. Like the rest of the X-Factor's drive-train parts, the axle shafts spin on metal-shielded ball bearings.

6 ALUMINUM SHOCKS. XTM borrowed the shocks from its new Xterminator 1/2-scale racing buggy and put them to good use on the X-Factor. The aluminum dampers use clip-on preload spacers to adjust ride height, and rubber boots protect the shock shafts from mud and debris.

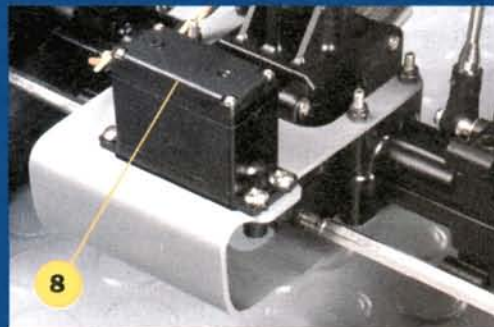
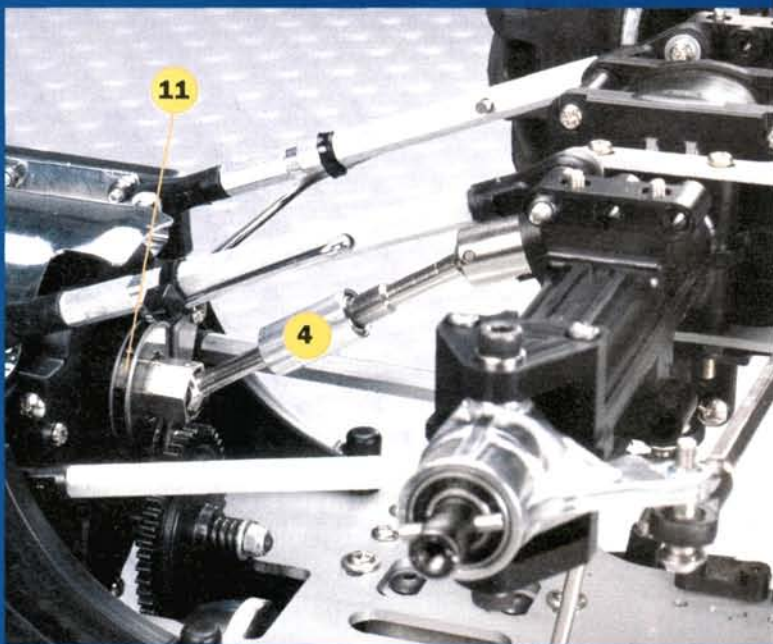
7 CANTILEVER SUSPENSION. The X-Factor's cantilevers aren't just for style; they're used to give the truck more suspension travel than the shocks alone could provide. The cantilevers pivot on plastic mounts attached to the upper chassis plate, and they're connected to the axles with steel tie rods.

8 HEAVY-DUTY STEERING SERVO. It takes a lot of muscle to steer a nitro monster truck's massive front wheels; a "standard" servo just won't cut it. To make certain the X-Factor has strong enough steering, XTM specs a Hitec 605BB ball-bearing servo for the wheel-pointing duty.

9 XTM 24-7 PULL-START ENGINE. A .21 engine would have been plenty for this truck, but bigger is always better, and the XTM powerplant displaces .247ci—definitely bigger. See "XTM's super-size engine" for more information on this big mill.

10 FOUR-LINK SUSPENSION. The X-Factor is the first nitro-powered monster truck to use a 4-link suspension system. The two upper links are triangular to prevent the axle from moving from side to side; the two bottom links are parallel (lingo alert: this setup is known as a "Satchell-link" system). Steel hex stock and heavy-duty ball ends make up each link. Swaybars are attached to the lower links, and steel rods connect the axle to the cantilever on the chassis.

11 DUAL-ROTOR DISC BRAKE. The inertia of a 12-pound truck running faster than 30mph requires a serious squeeze from a powerful brake if it's to stop safely. The X-Factor delivers with a pair of large-diameter brake rotors on an aluminum hub, and steel calipers do the clamping.



Specifications

MODEL X-Factor
MANUFACTURER XTM
DISTRIBUTED BY Global Hobby
PRICE \$450

DIMENSIONS

Wheelbase 12.75 in. (324mm)
 Width 16.375 in. (416mm)

WEIGHT

Total, as tested 192 oz. (5,443g)

CHASSIS

Type Ladder-style
 Material 3mm aluminum and plastic plate

DRIVE TRAIN

Type 2-speed with solid axles
 Primary Clutch bell/spur gears
 Differentials Sealed-gear
 Bearing type Shielded ball

SUSPENSION

Type 4-link with solid axle
 Shocks Aluminum-body, oil-filled

WHEELS

Type One-piece plastic w/chrome finish
 Dimensions 2.25x3.375 in.

TIRES

Type Chevron tread

ENGINE & ACCESSORIES

Type XTM 24.7 pull-start
 Carburetor 2-needle slide
 Pipe Aluminum muffler
 Manifold Cast-aluminum
 Fuel tank 125cc with internal stone filter

XTM's 24.7 super-size engine

XTM claims that its 24.7 .247ci engine is a clean-sheet design and not merely a punched-out .21. Its claimed peak output is 2.6hp with a peak rpm of 28,000. As you'd expect with any current big-block mill, a 2-needle carb, ABC construction, large heat-sink head and compact pull-starter mechanism are standard. We haven't dyno'd a 24-7, but we can say it's a real performer. Combine the engine's prodigious torque with the X-Factor's low gearing and you have an express ticket to wheelieville.



The verdict—so far

My X-Factor prototype isn't yet fully dialed in, but that's why there are prototypes: so the details can be worked out before a product makes it to your workbench. For certain, XTM's new truck is unique in the big-block monster category. With its 4-link suspension and plus-size engine, there's no mistaking it for a T-Maxx clone or a me-too monster buggy. I look forward to testing the production truck; if XTM gets it right, the X-Factor could be the marriage of real monster tech and nitro power that big-tire-flatbed fans have been hoping for.

Inside the R-Box >>

NITRO POWER WITH REVERSE

isn't big news, but fully proportional forward, braking and reverse control with a 2-channel radio and without complex linkages is definitely new—and cool. The X-Factor achieves the feat with XTM's new R-Box. The R-Box electronically mixes the X-Factor's throttle and reverse servos. Here's how it works: the R-Box is plugged into the receiver's number-2 channel, and the throttle servo is plugged into the R-Box's number-2 channel. The reverse servo is then plugged into the number-3 channel slot on the R-Box. When you give the radio up-trigger, the throttle servo actuates the brakes in the usual way. If you hold the trigger up, the R-Box will activate the reverse servo. The unit can be set with 3 to 5 seconds of delay before the reverse servo kicks in. Pull the trigger to apply throttle, and



you have fully proportional throttle control while in reverse. Hit the brakes again, and the R-Box shifts the tranny back into "forward." XTM also offers the R-Box separately for use in any truck that requires a third servo to operate a forward/reverse transmission (this includes the Traxxas T-Maxx, Kyosho Mega Force and DuraTrax Thunder Quake).

SOURCE GUIDE

XTM Distributed by Global Hobby Distributors, (714) 964-0827; globalhobby.com.

FIRST DRIVE >>



>> FAST FOUR-WHEELER

by Jason Sams

THE IRONY IS INESCAPABLE; TEAM LOSI'S FIRST 4WD buggy, the Double-X4, spawned the company's first touring car, the Street Weapon. Now the Street Weapon's superior successor, the Triple-XS, has inspired Team Losi's latest vision of 4WD off-road performance—the Triple-X4. The new machine is built around the Triple-XS's innovative, serpentine, single-belt drive-train concept, but the Triple-X4 is no touring-car conversion. The racing cred already established by the prototype Triple-X4 is

proof enough of that. Matt Francis' test proto was the fastest four-wheeler at the 2002 IFMAR Off Road Worlds!

Fast forward to now. Team Losi is set to release the Triple-X4 to racers everywhere, and we have one of the final preproduction versions here for our "First Drive" treatment. The car looks polished, and if it performs as we expect, the 4WD class can expect a new surge of activity—kind of like the big shove it was given when Losi's first four-wheeler came out!

PHOTOS BY WALTER SIDAS

Team Losi

TripleX4





DRIVING THE TRIPLE-X4

THE BUGGY I had the chance to drive was a preproduction car that Team Losi could spare for only a short time, so I tested the car just as it had been equipped by Losi with Taper Pin tires and a hot mode motor.

In only a lap, I realized that this new car felt more responsive than any other 4WD buggy I have ever tested. The efficiency of the single-belt drive train was very obvious when I pulled the trigger and the car accelerated effortlessly. The car launched powerfully yet was manageable and stable. The buggy felt feathery light and on edge as it floated over the whoops and moguls at our test track. Losi's supplied red-compound Taper Pins would have been great for a hard-packed track with lots of traction, but our track's loamy surface caused the car to feel a little loose; it slid in corners, but the drift was very controllable.

A tire change to larger knobs would have kept the rear end in check, but the Triple-X4 felt pretty good anyway. Any buggy that is easy to drive on a loose surface is sure to get better as traction improves, so the Triple-X4 will definitely be a top handler.

After exploring the buggy's handling characteristics in the corners, I tested its jumping ability. I was surprised at how well the suspension was able to suck up the landings while giving added push on lift-offs—a big help for tight technical doubles. I blipped the throttle, and the car leaped over jumps effortlessly. After running through a few packs on the track, I can say that the Triple-X4 is a capable racer and exciting to drive.



FEATURES

» Team Losi Triple-X4

1 EASY-ACCESS DIFFERENTIALS. The Triple-X4 is one of the easiest buggies to work on and maintain. The diffs, in particular, can be pulled out in minutes. Matt Francis, who ran a prototype 4WD buggy at the Off-Road World Championships, changed his diffs in about five minutes—pretty impressive to watch. Accessing the Double-X4's diffs was much more time-consuming. When a quick fix is the only thing that will get you back on the track before your next qualifier, the new buggy is a dream in the pits. The diffs are also externally adjustable, so disassembly isn't required.

2 TRIPLE-XS-STYLE CHASSIS. As you'd expect, the screw holes in the chassis' underside have been countersunk, so the screws sit flush. If you look closely, you'll also see that the battery and motor are as close to the bottom of the chassis as they can be to ensure the lowest possible center of gravity. The interlocking chassis/shock tower construction seen in other Triple-X cars is also used here; it enhances rigidity and helps to prevent crash impacts from tweaking the suspension. The bottom plate that protects the buggy's mono belt is easy to remove. The belt can be exposed for routine maintenance with very little effort. Although the buggy's chassis resembles the Triple-XS's, it is longer. According to Losi, the longer chassis is critical both to balance and handling.

3 HARD-ANODIZED SHOCKS. The Triple-X4's shocks have the same race-proven construction as those on all Losi vehicles. The hard-anodized aluminum bodies are bottom-filled and capped by cartridges that contain a pair of O-ring seals. The design is very easy to build and bleed properly, and kits will include Losi's Certified silicone fluid. Clamping preload collars set the ride height and put the squeeze on tuned springs that were chosen by the Team drivers during the Triple-X4's development tests.

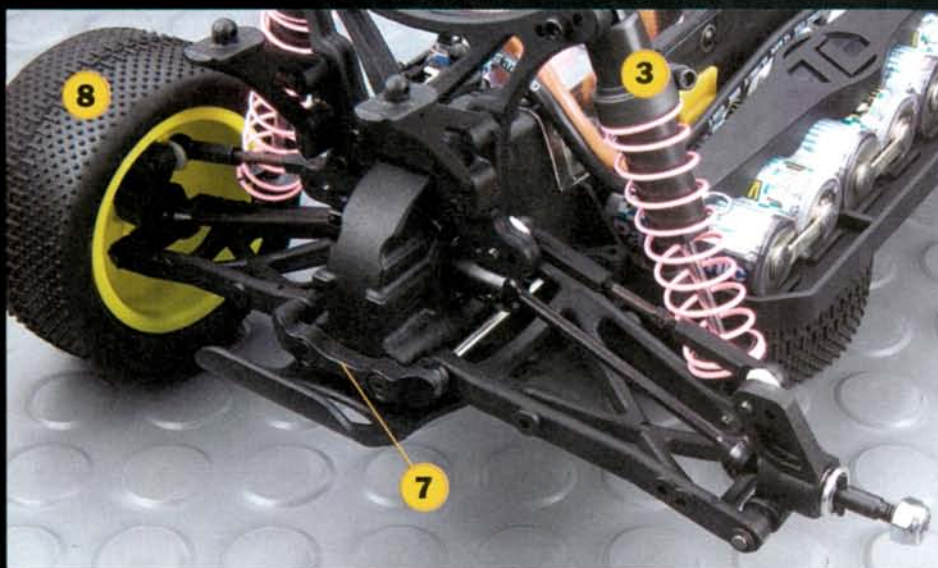
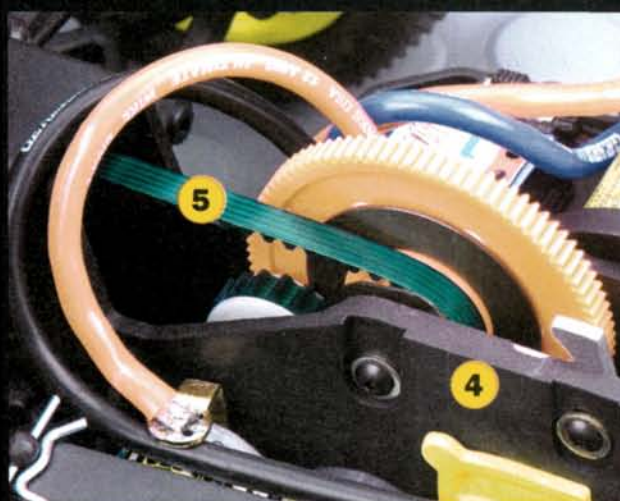
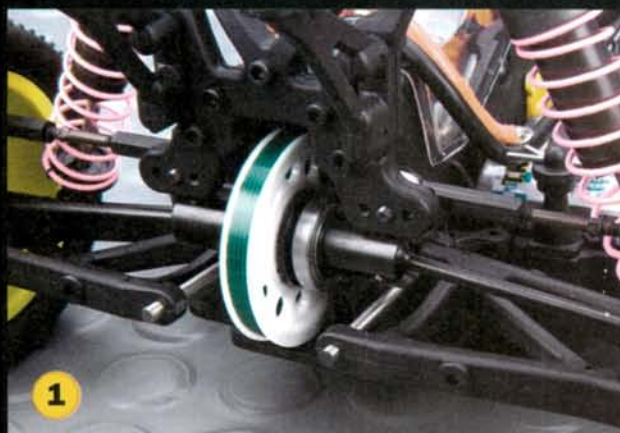
4 ADJUSTABLE SLIPPER CLUTCH. The Triple-X4's belt channel leaves little room for a slipper clutch, so the mechanism had to be slim to fit. To save space, puck-like slipper pads are contained in circular cutouts in the spur gear. The pads are made of the same fiber-type material as other Losi slippers. A small spring and nut set the tension of the slipper's thin clamping shoes. The slipper is adjustable, but the Lexan cover over the spur gear must first be removed. A thin wrench is supplied to allow easier access to the slipper nut.

5 OFF-ROAD SPECIFIC BELT. Team Losi realizes that the demands of off-road running are different from those of touring-car duty and wisely spec'd a new type of belt for the Triple-X4. The belt material is slightly elastic to help it "give" as the drive train absorbs the constant start/stop forces of bumps and jump landings. One thing that didn't change is the whisper-quiet and seemingly frictionless feel of the drive train. It's slick.

6 WORLDS-PROVEN SUSPENSION. There's a bit of the Double-X4 in the new Triple-X4; Losi's original four-wheeler donated its steering arms, rear suspension arms and hub carriers to the new buggy. "The arms and hub carriers work exactly as we want them to, so there was no need to change them," says designer Gil Losi Jr. With two world champ titles credited to the parts used by the Double-X4, we don't doubt it. Like the Triple-XS, the Triple-X4 is completely without E-clips; all the hinge pins are captured by their mounts or secured by setscrews. Steel turnbuckles are the finishing touch, and they're the same steel units as Losi uses on its other vehicles.

7 ADJUSTABLE REAR ANTI-SQUAT. Like the Triple-XS, the buggy's rear hinge-pin brace is adjustable. Changing the position of the brace alters the rear suspension's anti-squat. The brace gives you an option of three anti-squat settings. Only two screws hold the brace on the chassis, so changes can be made quickly and easily.

8 RED-COMPOUND TAPER PIN TIRES. The Triple-X4 is supplied with Losi Taper Pins; their short tread has worked well for the Losi team on a number of surfaces. Losi's signature bright yellow molded rims complement the tires provided.



THE VERDICT— SO FAR

Despite its outward similarities to the Triple-XS touring car, Team Losi's Triple-X4 is a no-compromise off-road design and a major improvement on the Double-X4. Certainly, the old car was no slouch, but Losi's new four-wheeler is easier to work on and saves you the hassle of building saddle packs; and based on Matt Francis' TQ performance at the World Championships, the Triple-X4 is simply faster. And that's what matters most in a race car.



Gil Losi Jr. on the Triple-X4

RC CAR ACTION: *The Double-X4 is still a fine buggy. Why press forward with a new design?*

GIL LOSI JR.: We started with the goal of doing it. We have been very happy with the single-belt drive train's performance because of its efficiency and acceleration. We just weren't sure how the car would work because of its loss of ground clearance compared with the Double-X4. Another challenge was whether

it would work without a slipper; it was a difficult project to conceptualize. We also wanted to make sure that the buggy would work better than the Double-X4 so that we'd feel comfortable putting our name on the box.

RCCA: *Does the Double-X4 have any handling characteristics that you set out to improve on?*

GL: I would not say that our goal was to build

a car that handles better than the Double-X4. We wanted handling to be as good, but we improved the drive train, improved the ease of maintenance and improved the reliability.

RCCA: *Average enthusiasts might think the Triple-X4 is a Triple-XS with off-road wheels and suspension. Could you explain how it's different?*

GL: We made a lot of subtle changes to suspension geometry and chassis length. Key factors such as how the car works and how the shocks lie and are positioned came after extensive testing.

RCCA: *Is the Triple-X4 significantly different from the prototype buggies that ran at the Off-Road World Championships?*

GL: It is only slightly different visually, but it is significantly different in handling. The huge increase in acceleration created handling problems because the suspension had to accommodate the huge weight transfer. The traditional ways of tuning were not working, so we changed the suspension and design to improve handling.

RCCA: *Faster acceleration equals greater weight transfer—of course! Anything else we should know about the car that isn't obvious from looking at it?*

GL: The main thing is that it is much more durable than the Double-X4, and in particular, it's very easy to maintain. ■



Even before the Triple-X4 was finished, it was fast; in the hands of Matt Francis, this X4 prototype was the fastest four-wheeler at the 2002 IFMAR off-road worlds.

SOURCE GUIDE

TEAM LOSI Distributed by Horizon Hobby Inc., (800) 338-4639; teamlosi.com; horizonhobby.com.

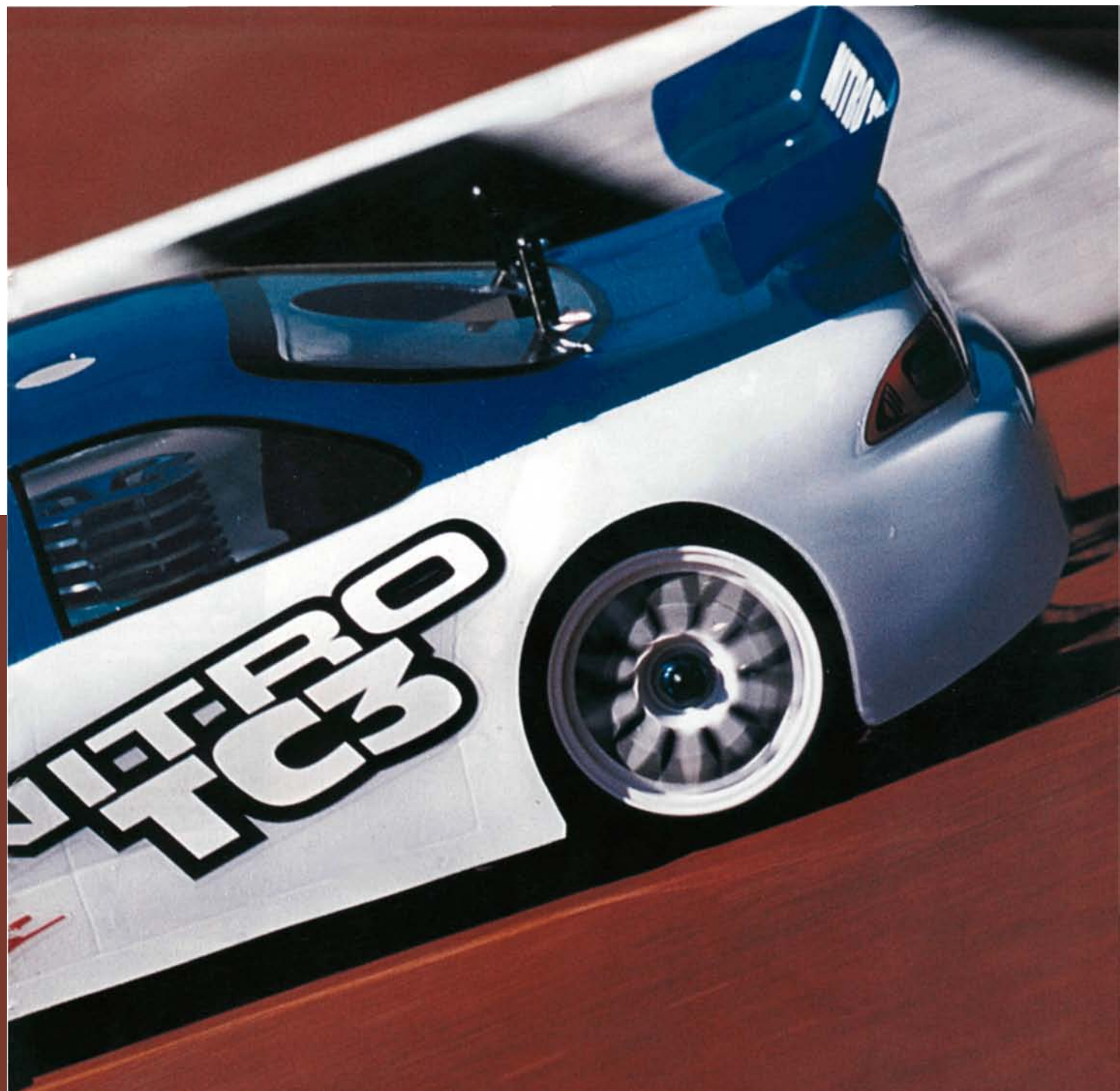
track
test

1/10-SCALE NITRO by Brad Hamann

Associated Nitro TC3 RTR



PHOTOS BY PETE HALL

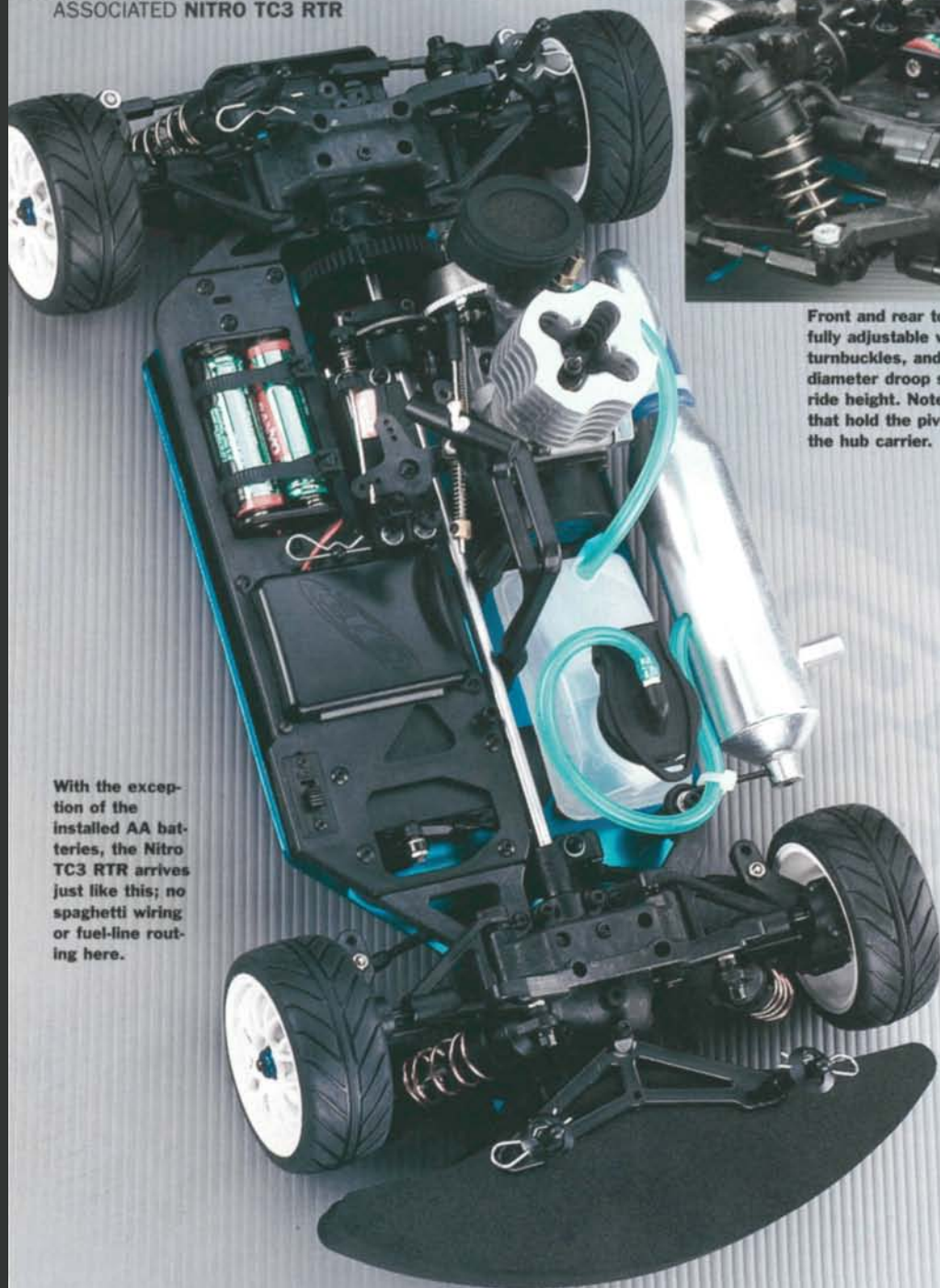


ALL PERFORMANCE— NO BUILDING!

FOLLOWING THE SUCCESSFUL RELEASE of Team Associated's RC10T3, RC10GT and GT Plus RTR vehicles, we knew that it was only a matter of time before the A-Team gave the extremely popular Nitro TC3 the RTR treatment. The new Nitro TC3 RTR is jammed with most of the racing features found on the unassembled Team kit, right down to the highly adjustable pillow-ball suspension and bulletproof front and rear ball diffs. The new RTR is 100-percent assembled and includes a painted, detailed and trimmed body, bonded wheels and tires and a fully adjustable Ace Jaguar radio system. And if racing is in your future, you'll be glad to know the RTR TC3's Thunder Tiger-built, pull-start engine is a ROAR-legal .12 unit.

track test

ASSOCIATED NITRO TC3 RTR



With the exception of the installed AA batteries, the Nitro TC3 RTR arrives just like this; no spaghetti wiring or fuel-line routing here.



Front and rear toe are fully adjustable via steel turnbuckles, and large-diameter droop screws set ride height. Note the caps that hold the pivot balls in the hub carrier.

THE NITRO TC3 RTR FEATURES THE SAME HIGHLY ADJUSTABLE PIVOT-BALL SUSPENSION AS THE TEAM CAR'S.



The radio tray is easily removed for cleaning, and the enclosed radio compartment is well protected against fuel spills.

DATA CENTER

VEHICLE TYPE 1/10-scale nitro touring car

BEST BUYER All nitro-touring fans, including racers—especially those with no time to build

KIT RATINGS (poor, satisfactory, good, very good, excellent)
Instructions Excellent

Parts fit and finish Very good

Durability Very good

Overall performance Very good

SPECIFICATIONS

MANUFACTURER Team Associated

MODEL Nitro TC3 RTR

SCALE 1/10

PRICE \$299

DIMENSIONS

Wheelbase 10.22 in. (260mm)

Width (adjustable) 7.87 in. (200mm)

WEIGHT

Total, as tested 61.4 oz. (1,742g)

CHASSIS

Type Double deck

Material 2.5mm aluminum plate with plastic upper deck

DRIVE TRAIN

Type Shaft drive

Primary 24-tooth clutch bell/

54-tooth spur gear

Primary ratio 2.24:1

Internal ratio 2.5:1

Drive shafts (F&R) Steel

universal axles

Differentials (F&R) Ball

differential

Bearing type Shielded

ball bearing

SUSPENSION

Type (F&R) Double A-arm pivot ball

Shocks Plastic-body, oil-filled, coil-over

WHEELS

Type White mesh spoke

TIRES

Rubber V-tread with foam inserts

RADIO GEAR

Transmitter Ace Jaguar 2TP

Servos Ace S1903

ENGINE AND ACCESSORIES

Engine Associated .12 pull-start

Carburetor 2-needle rotary

Manifold Associated tubular aluminum

Pipe Associated aluminum tuned pipe

KIT FEATURES

CHASSIS. The chassis is stamped from a 2.5mm-thick piece of T-6 aluminum and then anodized in brilliant blue. It's exactly the same as the countersunk chassis that's included in the Team kit. The chassis' radiused sides add torsional rigidity and prevent it from scraping during hard cornering. The molded upper deck incorporates an enclosed receiver box, which is anchored to separate chassis braces for minimal flex. The front end of the chassis is protected by a large, 3-piece bumper, and rubber bushings installed on the bumper posts provide extra crash protection. The TC3's small rear bumper does three jobs: it's the attachment point for the rear toe-links, it captures the lower suspension arm's hinge pins, and it protects the rear transmission.

DRIVE TRAIN. Unlike the Team car, the RTR is equipped with a single-speed transmission (if you want to upgrade, the 2-speed tranny is easy to install). The spur gear is secured to a



spur-gear mount that is attached directly to the rear gearbox. An aluminum center propeller shaft links the front and rear gearboxes via drive cups that are attached to finely molded ring-and-pinion gears inside the diff cases. Front and rear ball differentials are installed inside molded cases; these are the same high-tech units found on the Team car, and they arrived perfectly adjusted right out of the box. The Nitro TC3's single-rotor, disc-brake system features steel calipers with laminated brake linings, and the rotor is made from heat-treated carbon steel for smooth braking action. The brake rotor floats on four hardened dowel pins that are pressed into the rear drive cup to improve durability.

SUSPENSION AND STEERING. The Nitro TC3 RTR features the same highly adjustable pivot-ball suspension as the Team car's. The lower suspension arms are secured by captured hinge pins to separate arm mounts that are secured to the chassis—no more E-clips to mess around with. The upper suspension arms are attached to molded-in arm mounts on the front and rear shock towers. Setscrews threaded into the suspension arms allow chassis droop adjustment. The RTR includes all of the tools required to quickly and accurately tune the suspension. Additionally, the front and rear bulkheads, shock towers and pillow-ball carriers are interchangeable, so you'll be able to stock fewer replacement parts in your toolbox.

Plastic-body VCS (Volume Compensation System) shocks provide the TC3's damping. Foam inserts absorb shock fluid displaced by the shock

Right: the TC3's Thunder Tiger-built .12 engine is completely ROAR legal and plenty powerful. **Below:** an aluminum shaft is the heart of the TC3's driveline. Note the massive 4-pin brake block and large-diameter cam rod below the brake rotor.



shaft as the shocks are compressed, and the parts operate very smoothly; the RTR assembly crew does good work. Unlike the electric TC3 and its sliding-rack steering system, all versions of the Nitro TC3 use a more conventional dual-bellcrank setup. It's not entirely conventional, though; the tie-rod ball studs are attached to the drag link instead of to the bell-

crank arms, and they are positioned so washers may be installed under the studs to adjust ackerman.

ENGINE AND ACCESSORIES. The Nitro TC3 RTR comes equipped with a ROAR-legal, .12 pull-start engine that features a tall, machined-aluminum heat-sink head, true ABC construction and a dual-element, foam air filter. The carb has both high and low needle adjustments to aid in engine tuning, and a molded restrictor inside the carb opening makes the car easier to drive by limiting its peak horsepower. The side-exhaust engine is equipped with a U-shaped aluminum header that is mated to a single-chamber aluminum tuned pipe. The 75cc fuel tank has been redesigned; the pressure fitting is now installed on the tank lid to help prevent the fuel from foaming inside the tank.

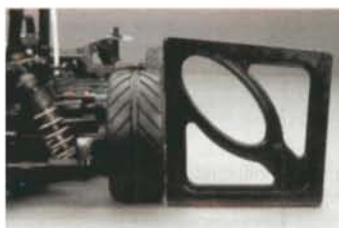
BODY, WHEELS AND TIRES. The TC3's two-color body shell is painted, not screen-printed, so its windows are transparent instead of blacked-out decals. Honda Accord and Dodge Stratus styles are available; I tested the Stratus. Both body styles are available in blue and white or red and white. The body arrives painted and trimmed, and cooling holes have been cut in the front and rear windows. Glow-igniter and antenna holes are also factory-cut. The TC3 has attractive rolling stock to match the bodywork. Medium-compound, treaded-rubber tires have foam inserts and are mounted and glued on white, mesh-style rims.

ELECTRONICS & ACCESSORIES



ACE JAGUAR 2TP RADIO SET. The Nitro TC3 RTR comes equipped with an Ace Jaguar 2-channel radio system and a pair of S1903 servos installed on the chassis. The transmitter features the usual steering and throttle trims and servo-reversing switches as well as throttle and steering dual-rate and endpoint adjustments. The transmitter also has three LEDs that let you know when it's time to replace the batteries. The S1903 servos are good for about 40 oz.-in. of torque, and they serve the TC3 well for fast parking-lot running.

TOOLS. Along with an assortment of L hex wrenches for the TC3's fasteners, Associated includes a nice set of molded tools to fit the shock caps and bodies, axle nuts, 4-40 nuts and turnbuckles. A molded camber gauge is also included—bonus!



YOU'LL NEED

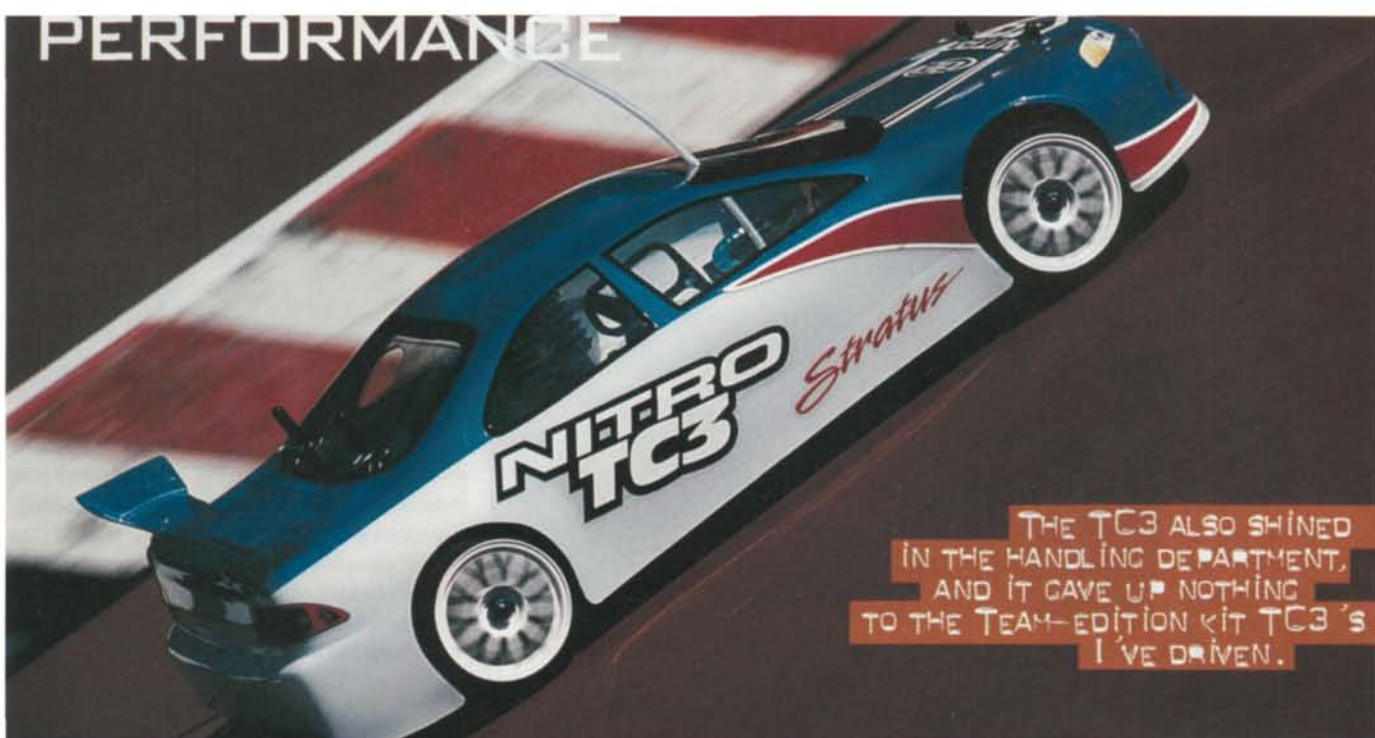
- 12 AA batteries
- Fuel
- Fuel bottle
- Glow-plug igniter

FACTORY OPTIONS

- 2-speed transmission—item no. 2285
- Front one-way assembly—1705
- Heat-sink engine mounts—1708
- Hard-anodized chassis—1752
- Carbon suspension arm set (front/rear)—2236/2244
- Carbon shock tower (fits front and rear)—2248

A clever camber gauge is included with the car; each corner indicates a camber setting (here, 2 degrees, as set at the factory).

PERFORMANCE



THE TC3 ALSO SHINED IN THE HANDLING DEPARTMENT, AND IT GAVE UP NOTHING TO THE TEAM-EDITION KIT TC3'S I'VE DRIVEN.

After following Associated's comprehensive break-in instructions, I was ready to confidently hit the pavement with the TC3 RTR. The restrictor plate in the carb definitely hindered acceleration, but the car's tall gearing gave it an impressive top speed of 45.6mph. The restrictor is a good idea for first-time drivers, but I was looking for a little more snap, so I decided to remove it. It took only a few seconds to remove the air filter and pop out the restrictor. What a difference! The TC3 now had a lot more punch off the line and accelerated much more quickly to top speed (which was unchanged).

Speed is great, but you gotta stop, too. I was impressed with the Nitro TC3 RTR's brake system; the linkages were set up perfectly at the factory, and I never had to futz around with the throttle trim or endpoint adjustments to adjust the brakes to my liking. It had a good "feel" as well—no grabbiness or pulsing, with a steady increase in braking power as up-trigger was applied. Wheel-locking power is available, but the TC3's brakes shine with their controllability. The TC3 also shined in the handling department, and it gave up nothing to the Team-edition kit TC3's I've driven. And why should it? The TC3 was smooth and stable when entering the corners, and it never felt as if the rear end was going to unexpectedly break free and spin out in the corners. The same was true when it exited corners—stable with no drama. The car also tracked very well, which indicates that it was built carefully at the factory.

LIKES

- Highly tunable pivot-ball suspension.
- Excellent engine break-in, tuning and troubleshooting instructions.
- Complete, step-by-step building manual included.

THE VERDICT

The Nitro TC3 RTR lived up to all of my expectations. I actually own a Nitro TC3 Team Car, and I can honestly say that in the hands of most drivers, the difference in performance between the two cars is marginal. If you plan to race, installing a 2-speed tranny is all that this car needs to make it competitive against other 2-speed-tranny-equipped vehicles. If you just want a super-fast nitro car to race up and down your street, you don't need the 2-speed tranny because the RTR is just as fast as a Team Car with equal horsepower on the top end. In all, the Nitro TC3 RTR is likely the best ready-to-run touring car available; it's a parking-lot player that can still take on the locals at the track—once you pop out the carb restrictor!

DISLIKES

- The chassis' roll bar/carrying handle is not tall enough to protect the engine in a crash.
- The 2-speed transmission included with Associated's kit TC3 is not included with the RTR version (but it will fit and is available separately).

Byron 20% Race 2000 Fuel

Byron's Race blend contains 12% total lubrication, with a synthetic/castor oil ratio of 60:40, which is more castor oil than other brands, according to Byron. The blend uses additional castor oil to help provide extra lean-run protection. Sounds good, and the TC3's engine seemed to like the stuff. And I did lean it out, so I hope the castor oil was doing its thing!



TEST GEAR

SOURCE GUIDE

ACE HOBBY DISTRIBUTORS
(949) 833-0088;
acehobby.com.

BYRON ORIGINALS
(712) 364-3165;
byronfuels.com.

TEAM ASSOCIATED
(714) 850-9342
teamassociated.com.

THE COMPETITION

	RADIO	STARTER	BALL BEARINGS	ENGINE	PAINTED BODY	PRICE*	REVIEWED
Associated Nitro TC3 RTR	Ace Jaguar	Pull	Yes	AE .12	Yes	\$300	1/03
DuraTrax Street Force	DuraTrax by Futaba	Pull	Yes	Velocity .15	Yes	\$300	9/00
HPI Nitro RS4 3 RTR	HPI by Airtronics	Pull	Yes	Nitro Star .15FE	Yes	\$270	6/02
Traxxas Nitro 4-TEC	Traxxas TQ	Electric	Yes	TRX 2.5	Yes	\$350	4/99**
Mugen MSX-3	Hitec	Pull	Yes	MV-12	No	\$300	2/02
Yokomo GT-4 RTR	Airtronics	Pull	Yes	Yokomo .18	No	\$400	8/02 Nitro

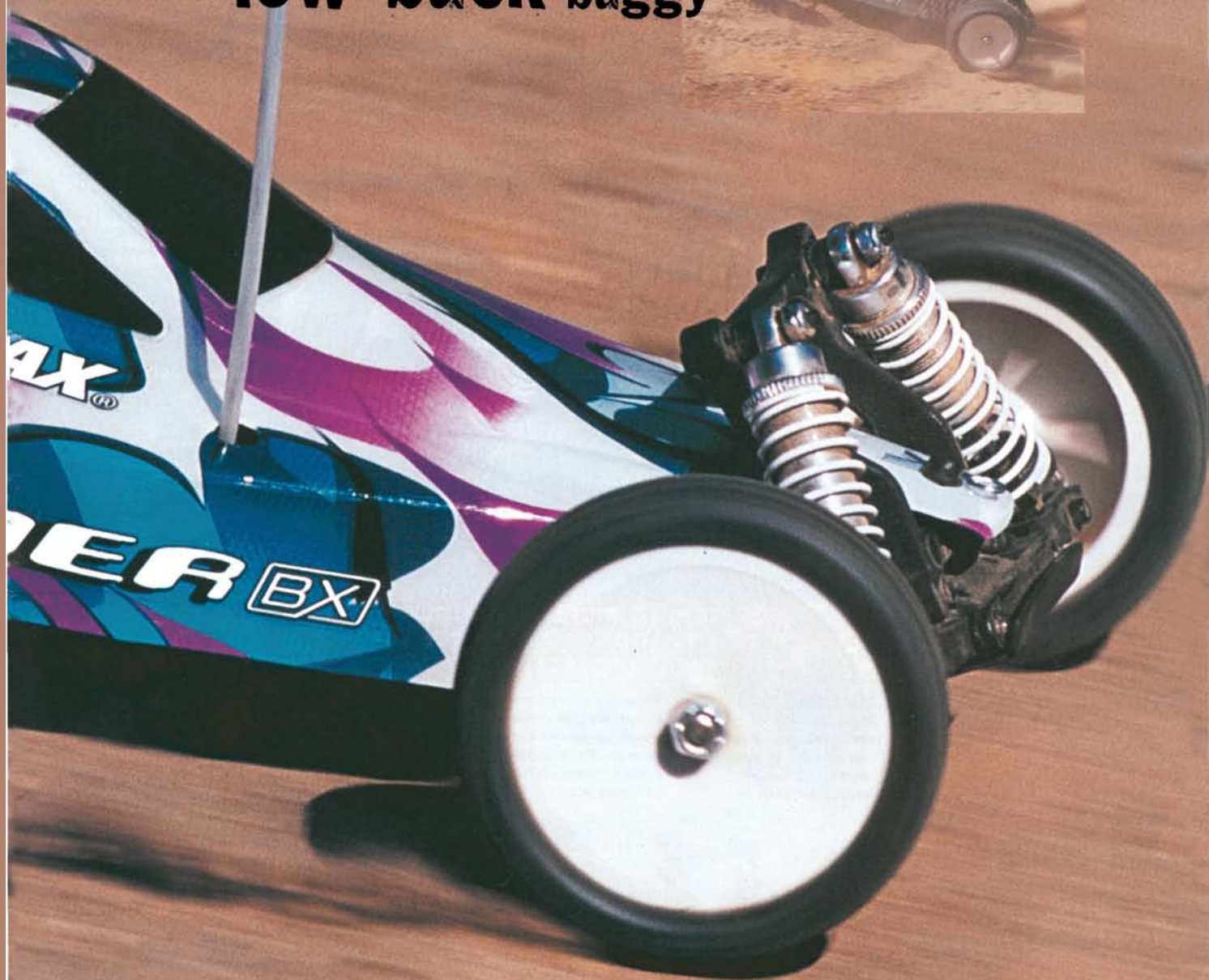
*Price varies with dealer. **Original review; latest version with TRX 2.5 engine has not been tested yet.



DuraTrax Evader BX

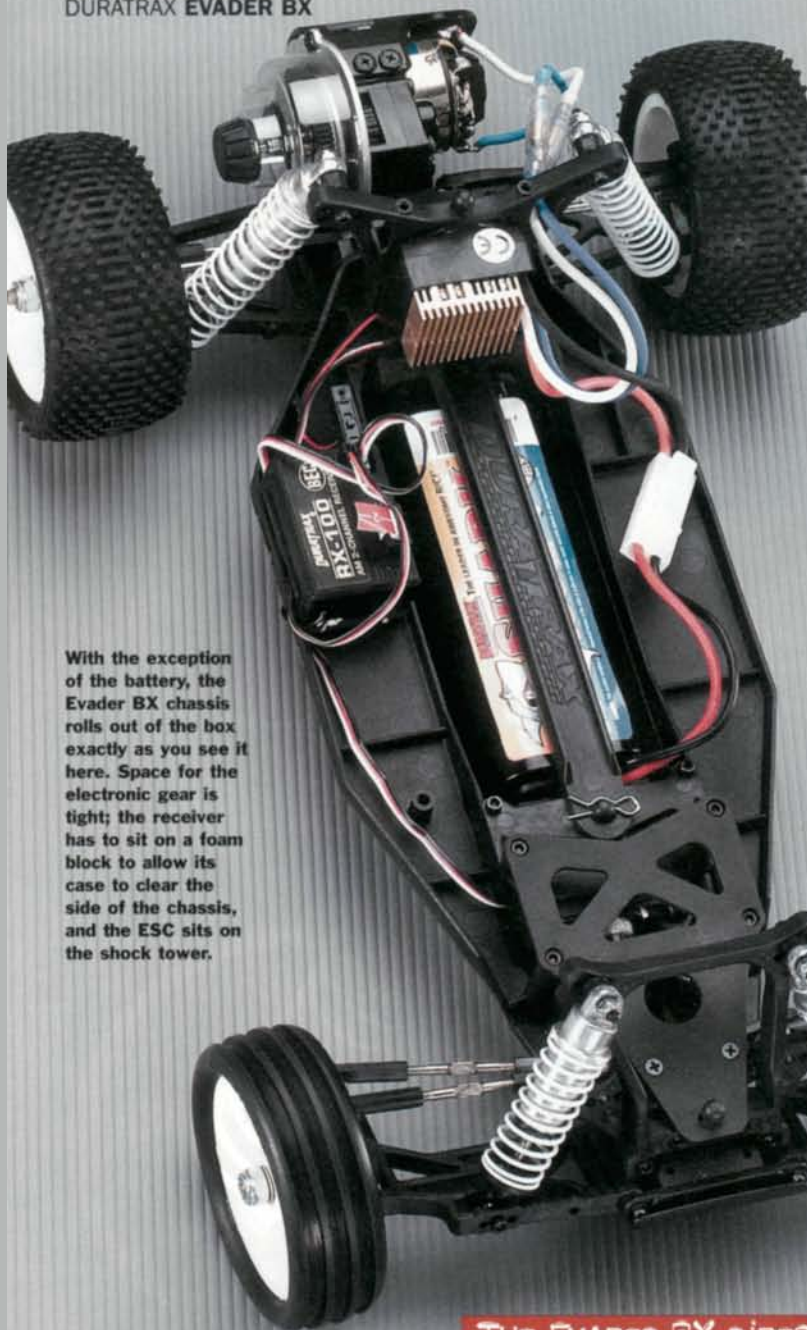
DURATRAX SET A NEW STANDARD for ready-to-run electric truck performance with the Evader ST; it piled just about every racing feature a truck fan could ask for into an incredibly inexpensive, factory-finished package. Now DuraTrax brings the Evader experience to buggies with the Evader BX. The new machine matches the original ST feature for feature—from threaded aluminum shocks and full ball bearings to a screen-printed body and universal-joint axles. DuraTrax's Sprint reversing ESC and high-quality Futaba-built radio gear return, too, and the newest Evader is as affordable as the original flatbed. Let's hit the dirt, dirt cheap.

**High-performance,
low-buck** buggy



track test

DURATRAX EVADER BX



With the exception of the battery, the Evader BX chassis rolls out of the box exactly as you see it here. Space for the electronic gear is tight; the receiver has to sit on a foam block to allow its case to clear the side of the chassis, and the ESC sits on the shock tower.



The turnbuckles have a titanium look but are actually steel. Foam dirt shields are a nice touch, and the combined king-pin/ball studs help give the BX its aggressive handling.

DATA CENTER

VEHICLE TYPE 2WD electric ready-to-run buggy

BEST BUYER Beginners, first-time racers, electric buggy fans.

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Very good

Parts fit/finish Very good

Durability Very good

Overall performance Very good

SPECIFICATIONS

MANUFACTURER DuraTrax

MODEL Evader BX

DISTRIBUTED BY Great Planes

SCALE 1/10

PRICE (varies with dealer) \$189.99

DIMENSIONS

Wheelbase (287mm)

Width (245mm)

WEIGHT

Total, as tested 56.6 oz. (1.605g)

CHASSIS

Type Molded semi-tub

Material Stress-Tech plastic

DRIVE TRAIN

Type 3-gear transmission

Primary 81-tooth spur gear/23-tooth pinion

Drive shafts Plated universal-joint

Differential Ball-type

Bearing type Metal-shielded ball bearings

SUSPENSION

Type Lower H-arm with turnbuckle upper link

Shocks Aluminum, threaded-body, oil-filled

WHEELS

Type One-piece, 2.2-in. dish

TIRES

Type (F/R) 4-rib/bar-tread; foam inserts

ELECTRONICS

Transmitter DuraTrax

Servo DuraTrax SX-100

ESC DuraTrax Sprint

Motor DuraTrax Photon Speed

Battery Not included

THE EVADER BX RIDES ON EXACTLY THE SAME MOLDED CHASSIS AS THE EVADER ST, SO YOU GET AN UP-TO-DATE DESIGN WITH ALL THE CURRENT OFF-ROAD RACING TOUCHES.



The BX's raised sides increase its cornering clearance and give the chassis a smaller "footprint" when it bottoms out.

Threaded shock bodies make it easy to slam the suspension for smooth tracks (as shown here) or increase the buggy's ground clearance for backyard action.



KIT FEATURES

CHASSIS. The Evader BX rides on exactly the same molded chassis as the Evader ST, so you get an up-to-date design with all the current off-road racing touches. Raised sides increase cornering clearance; the front and rear suspension assemblies may be removed intact; and a plastic strap holds the battery on the chassis' centerline (it's one of the few items not included with the BX). A molded upper brace stiffens the front end, and the rear bumper is extended to protect the motor's endbell. All the plastic chassis and suspension parts are molded of DuraTrax's Stress-Tech plastic, which has a little extra flex for durability; in fact, DuraTrax warranties the Stress-Tech parts against breakage for a full year. If you break it, DuraTrax replaces it.

DRIVE TRAIN. No changes were made to the Evader ST's 3-gear ratio transmission for buggy duty. The ball-bearing-equipped gearbox has a one-piece steel top shaft and top gear with plastic idler and diff gears. The ball differential uses standard $\frac{3}{32}$ -inch balls (12 in all) and a caged thrust bearing with steel outdrives. An Associated-style, single-pad slipper clutch is also standard; the design allows you to make spur-gear changes without altering the slipper setting. The spur gear itself is an 81-tooth unit that meshes with a 23-tooth steel pinion—both standard 48-pitch. The BX's 3.52:1 pinion/spur ratio is taller than the Evader ST's 4.88:1 ratio to compensate for the BX's smaller, buggy-size tires. Completing the drive train, a pair of plated universal-joint axles pass through metal-shielded ball bearings before they're connected with the wheels by means of roll pins.

SUSPENSION AND STEERING. Threaded, aluminum-body shocks are the stars here. They're assembled, Losi style, with bottom-loaded sealed cartridges, and they use knurled collars for no-tool preload adjustments. The rest of the suspension is equally well featured: the thick steel turnbuckles resemble Lunsford's titanium units; there are foam dirt seals on the steel ball studs and combined kingpin/ball studs up front. A pair of bellcranks and turnbuckle tie rods steer the front wheels, and an adjustable servo-saver is built into



Left: the Associated-style, single-pad slipper clutch allows you to change the spur without altering the spur-gear setting.

Below: the Evader's 3-gear transmission would be right at home in any modern racing buggy. Ball bearings are standard on all the BX's rotating parts.

the bellcranks (but is almost inaccessible unless you remove the front chassis brace). Camber and servo-saver tension are adjustable, and roll center can be adjusted using three inboard front and four inboard rear camber-link locations plus three camber-link locations on the rear hubs. Shock position can be changed as well; up front, there are three upper and three lower shock-mounting holes; the rear gets a five upper/two lower combo. The BX's wheelbase can be changed using spacers that slide the rear hub carriers fore and aft on their hinge pins, and rear toe-in is fixed at 3 degrees.



ELECTRONICS & ACCESSORIES



DURATRAX RADIO SET. The Evader BX has the same Futaba-built radio gear as the ST. The transmitter is comfortable to hold, has an extra-bright "on" LED and is even equipped with dual-rate steering—an especially useful feature if you have track time planned for the BX.

DURATRAX PHOTON SPEED MOTOR. No closed-endbell Mabuchi-style motor here; the Evader BX has an open-endbell, 20-turn modified that is not only more powerful, but also more economical; when the brushes wear out, you can easily replace them instead of tossing out the motor. Just be sure to keep the Photon's bushings clean



and lubed, and it will last a long time.

DURATRAX SPRINT ESC. The Evader's Sprint ESC delivers punchy performance thanks to 1000Hz switching, and it's fully programmed by DuraTrax—no set up required. If you ever do need to reset it, don't bother looking for any setup button; there isn't one. Instead, the Sprint automatically enters its "setup" mode

whenever it's switched on. Hit the switch, squeeze full throttle, grab full brake, let the trigger go and the ESC is set. The Sprint is also reverse-capable and has proportional braking. Reverse engages "softly" to avoid those transmission-bruising forward-to-reverse slams, but you can shift from reverse to forward as hard as you like.

VIDEO. Along with a one-page "Quick Start" guide and an illustrated, ground-up assembly manual with exploded views and tuning advice, DuraTrax supplies a VHS tape to help absolute beginners get the Evader up and running. The video features the Evader ST truck, but all the same info applies. You'll find yourself fast-forwarding through the



YOU'LL NEED

- 6-cell stick pack
- Charger

FACTORY OPTIONS

- Anodized-aluminum parts (blue/purple)
 - Battery strap—DTXC6294/6295
 - Hinge-pin plate—DTXC6613/6614
 - Bulkhead—DTXC6807/6808
 - Front hub carriers—DTXC8032/8033
 - Rear hub carriers—DTXC8071/8072
 - Steering arms—DTXC8224/8225
 - Rear shocks—DTXC9226/9227
 - Front shocks—DTXC9241/9242
- Titanium parts
 - Turnbuckle set—DTXC9827
 - Kingpins—DTXC8206
 - Hinge pins—DTXC802

more mundane bits (like the segment on installing the antenna tube), but the advice on setting the slipper clutch and ball differential is good stuff. There's also a lot of footage of DuraTrax's other vehicles in action (complete with hair-metal guitar licks)—worth catching after the how-to stuff has been wrapped up.

TOOLS. You won't need tools to get the Evader BX out of the box and onto the track, but DuraTrax does include a few items to help you with maintenance. A four-way wrench has all the socket sizes you'll need to adjust the slipper clutch and remove the wheels, and hex wrenches are supplied for the screws that hold the car together. A stamped turnbuckle wrench is also included.

track test

DURATRAX EVADER BX

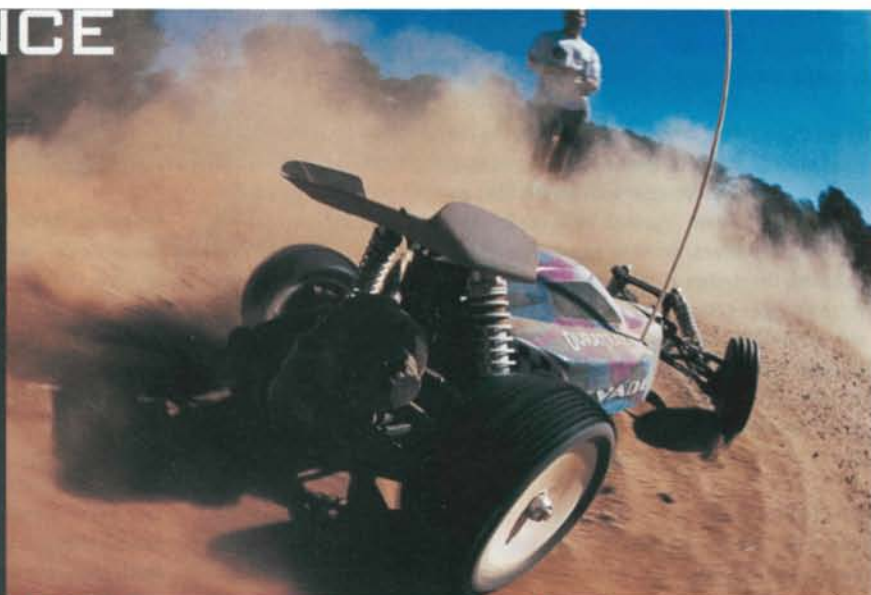
BODY, WHEELS, AND TIRES. Like all DuraTrax vehicles, the Evader BX includes a factory-finished body. DuraTrax supplies a set of "black-out" window decals and a sheet of Evader logos to finish it off. The wing is painted (or, to be more accurate, printed), and it's mounted on the rear shock tower with a music-wire yoke—old-school-style. DuraTrax has bent the wire to shape and mounted the wing for you.

Dish-type, 2.2-inch wheels are standard, and they're shod with firm-ish rubber tires supported by foam inserts. The fronts are the usual 4-rib type, and the rears are styled like Team Losi Taper-Pins. DuraTrax handles the gluing and does a good job—no gaps or glue on the sidewalls. When you're ready for new rubber, if your shop doesn't have DuraTrax hoops on the wall, Team Losi rear rims will fit the Evader.

PERFORMANCE

We usually radar-test cars in the parking lot, but I figured the Evader BX would be able to make its drag runs in our office's particularly long, carpeted hallway. It did it, but barely! With a top speed of 21.1mph, it moved out with snappy acceleration and quickly made it to the end of the building, where a big handful of brake was required to prevent it from smacking the wall. The Sprint ESC's brakes grabbed the rear tires firmly and hauled it to a stop within about 10 feet.

Suitably impressed by the Evader's throttle and brake control, I moved the action outside to a school baseball diamond. The firm, shallow-tread rear tires didn't hook up well on the soft silty sand, but they did throw a healthy roost of dirt—a wake of billowing brown dust clouds. As set up by DuraTrax, the buggy's handling was a little on the loose side but quite tractable. Hanging the tail out sprint-car style was just a matter of flicking the wheel, and the Evader was happy to stay sideways as long as I was willing to feed in countersteering. Straightening the wheel abruptly tended to snap the Evader into oversteer in the opposite direction, but with a lighter touch, it was easy to get the buggy back in the groove.



THE EVADER TOOK TO THE TRACK LIKE THE RACING BUGGIES IT'S PATTERNED AFTER.

LIKES

- Threaded aluminum shocks, ball diff, beefy turnbuckles, ball bearings and slipper clutch—all standard!
- Fast, right out of the box.
- Super-tough, and there's a generous parts-replacement warranty if you're a total hack.
- Included manual and video cover common and not-so-common maintenance tasks.

I wrapped up the testing by sneaking the Evader BX under the fence of the local skatepark for some ReVolt Stunt Arena-style action. The run included more slams than a collection of skate-video outtakes, but the BX always came back for more (although the wing wire did get pretty pretzled when the Evader landed upside-down on pavement after shooting over a spine ramp).

THE VERDICT

No surprises here; the Evader BX is just as tough, fast and inexpensive as the Evader ST that spawned it. If you think you'd like to try racing, the Evader's fully adjustable suspension and Losi-wheel compatibility make it a fine first race car, and if heavy-duty play is your mission, the super-rugged Stress-Tech parts will keep you rolling, even after big hits. (And if you do break something, there's a generous parts-replacement warranty.) No other ready-to-run buggy offers all the features the BX has (or even comes close), and you can't beat the price. In the ready-to-run buggy category, the Evader BX is the best you can buy.

DISLIKES

- You'll have to buy a battery and charger; a version of the BX that includes these would be welcome.

DuraTrax Shark 1500 pack

The latest 3000 and 3300mAh NiMH super cells are getting all the racers' attention, but there's still plenty of room left for inexpensive Ni-Cd batteries such as DuraTrax's Shark pack. Its 1500mAh capacity may seem low, but it's enough for nearly 10 minutes of run time with the Evader's fast, but frugal, Photon Speed motor. It's a nicely built pack, too, assembled with flexible silicone wire, a tight shrink job, and the ubiquitous Tamiya-type plug.



SOURCE GUIDE

DURATRAX Distributed by Great Planes Model Distributors; (800) 682-8948; duratrax.com.

THE COMPETITION

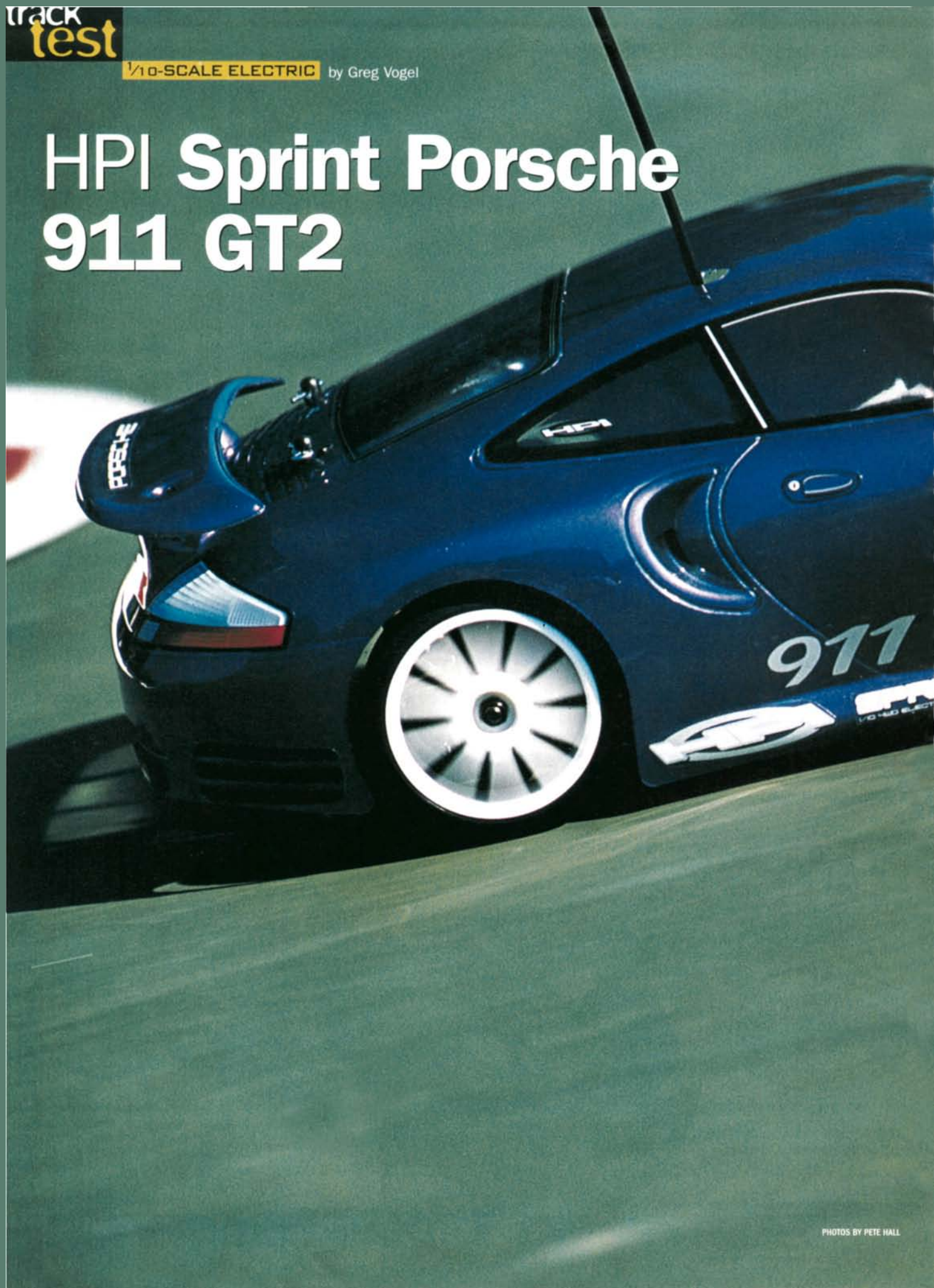
	SHOCKS	BALL BEARINGS	SLIPPER CLUTCH	DIFFERENTIAL	ESC	DRIVE SHAFTS	MOTOR	PAINTED BODY	PRICE*	REVIEWED
DuraTrax Evader BX	Aluminum	Yes	Yes	Ball	DuraTrax Sprint	Universal joint	20 turn	Yes	\$180	1/03
Kyosho Ultima Readysset	Plastic	No	No	Bevel gear	No	Dogbones	20 turn	Yes	\$170	9/01
Traxxas Bandit	Plastic	Transmission	Yes	Planetary gear	No	Telescoping universal	20 turn	Yes	\$130	7/96

*Price varies with dealer

track
test

1/10-SCALE ELECTRIC by Greg Vogel

HPI Sprint Porsche 911 GT2



PHOTOS BY PETE HALL



From the box to the **autobahn**

FOR MANY YEARS, PORSCHE HAS BEEN PERFECTING the very best in sports-car engineering, and that continuous process of evolution led to the release of the 911 GT2. It's an excellent example of how Porsche Motorsport's racing technology could be adapted for the road in the hands of an enthusiast driver.

The GT2 is also HPI's latest touring car, which is fitting because in many ways, HPI is just like Porsche. Throughout the years, it has used RC racing experience as a template to guide the adaptation of its cars to fit the needs of all types of drivers—specifically with an eye on performance.

The new Sprint RTR is an example of HPI's race-bred technology for the new enthusiasts. It features all the trimmings typically found in other competition cars but in an inexpensive package. The kit includes a radio system, battery charger, a quick motor and your choice of a hot, painted Porsche 911 GT2 or a sleek Mercedes Benz CLK DTM body. This package was designed to attract potential drivers to the hobby, and once they get their hands on it, they'll soon be ready to race at the track or rule the streets.

track test

HPI SPRINT PORSCHE 911 GT2



HPI DID AN
EXCELLENT JOB IN
CREATING A RIGID
BACKBONE FOR
THE SPRINT.

Below: the rear suspension features beefy rear hubs to support the ball bearings and axles.



DATA CENTER

VEHICLE TYPE 1/10-scale
electric sedan

BEST BUYER Entry-level drivers
looking for a fun car with the
potential for racing

KIT RATINGS

(poor, satisfactory, good, very
good, excellent)

Instructions Excellent

Parts fit and finish Very good

Durability Very good

Overall performance Very good

SPECIFICATIONS

MANUFACTURER HPI

MODEL Sprint

SCALE 1/10

PRICE (varies with dealer)
\$269.99

DIMENSIONS

Wheelbase 10.125 in. (255mm)

Width 7.3 in. (185mm)

WEIGHT

Total, as tested 43.56 oz.
(1,238g)

CHASSIS

Type Double deck

Material Composite plastic

DRIVE TRAIN

Type Dual belt

Primary 28T pinion/87T spur gear

Transmission ratio 2.13:1

Final drive ratio 6.62:1

Drive shafts (F/R) Dogbones

Differential Grease-filled gear
diffs

Bearing type Metal-shielded ball
bearings

SUSPENSION

Type (F/R) A-Arm with fixed
upper link

Shocks Clear-body, oil-filled,
coil-over shocks

WHEELS

Type White 10-spoke plastic

TIRES

Type Rubber slicks

Left: hidden in this
photo by the shock
collars, the shock
bodies are clear so
that you can see the
color of the oil or
whether the oil is
dirty and needs to be
replaced.

KIT FEATURES

CHASSIS. As soon as you pop the body off, you'll notice the Sprint's composite-plastic lower plate and upper deck. As a veteran racer, my first instinct was to grab both ends of the chassis and twist and bend it in an effort to make the car flex. After trying to play the car like an accordion, I'm pleased to report that this chassis is solid and shows few signs of flex. HPI



Here's a look at the lower, composite-plastic chassis plate. Slots have been cut out and provisions made on the battery hold-downs for saddle-style battery packs.



did an excellent job in creating a rigid backbone for the Sprint.

The stick battery pack is held in place on both sides of the chassis by endplates. To remove it, simply take out a body clip from either side, swing open the endplate and pull the pack out. The chassis has provisions for a side-by-side saddle pack; slight modifications (such as moving the endplate hinge posts) are necessary to make the alternate pack work.

The car is protected by a rigid plastic lower bumper, and a foam bumper on top will cushion any impacts.

DRIVE TRAIN. A dual-belt drive system delivers power to the wheels, and HPI supplies an 87-tooth spur gear and a 28-tooth pinion gear to get the

belts moving. The spur gear is attached to a main pulley shaft that sits in cam-style bearing holders in the purple-aluminum sideplates. These holders allow the rear belt to be adjusted when it stretches, and a tensioner unit that is mounted just in front of the main shaft tightens the front belt. Gear differentials are on both ends of the car; nestled inside are two bevel gears attached to outdrives that drive the axles, and two transfer gears create the diff action. The diffs are packed with grease so the parts will run friction free, and a complete bearing set helps the drive train run smoothly. Power is transferred to the wheels through tough steel dogbones and axles.

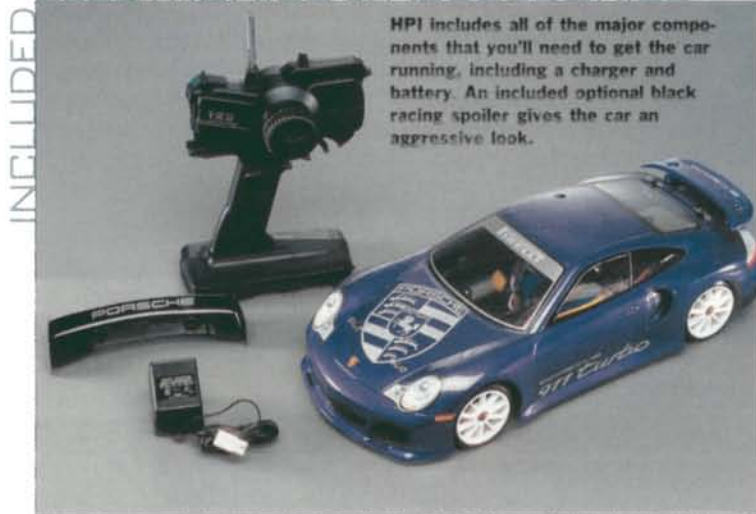
SUSPENSION AND STEERING. Working from the top down, the suspension features rigid, molded-composite front and rear shock towers that are bolted to the bulkheads. Clear-body, short touring-car shocks damp each suspension arm, and the oil-filled shocks have stiff springs for race-like handling. The shocks can be moved on the suspension arms and rear tower to fine-tune the car's feel.

The A-arm suspension has a fixed upper link in both front and rear, and the setup is very strong and user friendly. There's no need to worry about adjusting tie rods or that they will bend in

a collision; this setup can withstand curb attacks. The front and rear hubs and the steering knuckles are beefy units, and camber-rod holes offer the option to adjust the car's handling. If you decide to use different camber-rod holes, you'll need to purchase adjustable tie rods.

BODY, WHEELS AND TIRES. The Sprint is available in two body shells: a smooth Porsche 911 Turbo and a sleek Mercedes Benz CLK DTM. We tested the painted and decal purple Porsche. It comes with the small wing, and HPI also includes an aggressive-looking, large black racing spoiler. White 10-spoke rims with HPI slick tires and foam inserts are on each corner. The tires weren't glued to the rims, which is unusual for an RTR. That isn't a big deal; it takes only a few minutes to glue the tires. One could argue that unglued tires give you the option to install aftermarket tires from the start, but most Sprint buyers will probably wish the tires came glued.

ELECTRONICS & ACCESSORIES



HPI includes all of the major components that you'll need to get the car running, including a charger and battery. An included optional black racing spoiler gives the car an aggressive look.

HPI TX-2 RADIO SYSTEM. The HPI radio system is an OEM Airtronics radio system—really good equipment. The radio features a comfortable grip, steering and throttle trims and a dual-rate steering knob that allows you to dial in more steering. The car has an RX-1 receiver and a heavy-duty servo with 50 oz.-in. of torque that turns the wheels while cornering.

NOSRAM REVERSING ESC. The Nosram Tomahawk ESC is an attractive unit with a black case and red heat sinks. It allows smooth throttle response and helps to lengthen runs. It has a 50/50 brake and reverse setup so you can slow the vehicle and back away from trouble.

HPI 1500MAH BATTERY. This battery has a nice balance of power and run time and is a good match for the Sprint.

WALL CHARGER. HPI includes a six-hour charger to help you get going. Plug it in first thing in the morning, and in the afternoon, your battery will be charged for play. You'll soon want to upgrade to a fast charger, but at least you can drive the Sprint without having to get a charger from the start.

YOU'LL NEED

- 8 AA batteries
- CA glue for the tires

HPI DASH

If the Sprint is out of your price range, or you're looking for something a little more basic, HPI still has you covered. Pictured here are HPI's Dash kits. The Dash is a completely ready-to-run vehicle, and it includes everything you'll need—and we mean everything: a 7.2V battery pack for the car and charger, a radio with 9V battery, and, of course, the completely assembled chassis with a painted body. This basic model features a 380 motor, rear-wheel drive, an enclosed chassis and spring-damped suspension. It's fun to drive, takes a lot of abuse and is perfect for first-time drivers of all ages.



PERFORMANCE



THE SPRINT GETS UP TO SPEED VERY QUICKLY, AND IT TOPPED OUT AT 21.8MPH.

A six-hour charger is included with the Sprint, but I didn't want to wait six hours to test the car, so I threw the battery pack on a quick charger to pump the cells full of life. While the pack was on charge, I threw a bead of glue on the tires. Just about the time the glue had set, the charger tone went off, and the car was ready for testing.

A nice clean basketball court, a few Road Domes spread out, and I

had an instant test course. The Sprint gets up to speed very quickly, and it topped out at 21.8mph. That may not be a speed record, but it will feel very fast to first-time drivers and is in the higher end of the RTR electric touring car speed spectrum.

The ESC has a nice forward feel to it, but I recommend that you use the brakes carefully. The Nosram speed controller is set up to use the first 50 percent of the reverse trigger throw for brake and the second 50 percent for reverse. I found that when I tried to apply hard braking, I would inadvertently wander past the 50-percent mark and instead move the car into reverse. This doesn't harm the speed controller, but it does put a strain on the belts; I heard them skip.

As it moved around the corner dots, the Sprint's front end pushed

because of its hard shock-spring and suspension setup. A car that pushes around corners is much easier for first-time drivers to get used to than one that enters corners and spins out. The car was very easy and fun to drive; bumps in the pavement weren't a threat, either. I found that when the car ran through a rough area, it tracked straight and smooth and didn't get out of shape.

THE VERDICT

The HPI Sprint is a very attractive package, and I literally mean an attractive package! From its cool box to its stylish Porsche body, sleek chassis and electronics gear to its accessories and performance, the Sprint has it all. This sedan is a car that a driver can grow into. In stock form, it's nimble and powerful enough to be a blast to run. Once the driver gets a handle on it and is ready for more—even racing—he can drop in a better motor and battery.

DISLIKES

- Tires aren't glued.
- Speed controller's brake/reverse is sensitive.

LIKES

- Great electronics package: radio, ESC, battery and charger.
- Stylish body with cool race spoiler.
- Raceworthy chassis.

SOURCE GUIDE

HPI RACING (949) 753-1099; hpiracing.com.

THE COMPETITION

MODEL	CHASSIS	DRIVE TRAIN	BALL BEARINGS	DIFFERENTIALS	AXLES	PRICE	REVIEWED
Associated TC3	Molded semi-tub	Shaft	Complete set	Ball	Universal	\$259	TC 02*
CEN GX-1	Fiberglass	Belt/gearbox	Complete set	Gear	Dogbones	\$189	TC 02*
HPI Sprint	Molded-composite plate	Dual belt	Complete set	Gear	Dogbones	\$269	01/03
Tamiya TL-01	Molded semi-tub	Shaft	Bushings	Bevel gear	Dogbones	\$215	TC 02*
Traxxas 4-TEC	Molded composite	Dual belt	Drive train only	Ball	Universals	\$189	5/98

Price varies with dealer. *RTR 4WD electric touring car shootout, RC Touring Car special issue.

XTM Racing X-Terminator RTR



XTM IS KNOWN FOR STARTER BOXES, big-block conversion kits and CNC aluminum accessories for the popular T-Maxx, but the company also makes 2WD and 4WD RTR $\frac{1}{10}$ -scale electric- (Baja Bullet) and nitro-powered (Baja Blade, Baja Outlaw) off-road trucks. It was XTM's .247 nitro engine, however, that put the company in the limelight and started the trend toward larger-displacement big-block nitro engines. We knew that it was only a matter of time before XTM released a chassis that would be a worthy foundation for the potent 24-7 mill, but we didn't know that XTM had two vehicles in the works!

You can read the "First Drive" on XTM's new X-Factor monster truck elsewhere in this issue, but now it's time to focus our attention on the second stage of XTM's big-block assault: the X-Terminator. The X-Terminator is a ready-to-run, $\frac{1}{8}$ -scale 4WD buggy that's loaded with impressive features and many well-thought-out details, but its large engine makes it one of only a couple entries in the rapidly growing RTR $\frac{1}{8}$ -scale buggy category to break through the .21-size engine barrier.



Big-Time Big-Block Buggy

track test

XTM RACING XTERMINATOR RTR



The X-Terminator's included fuel filter had to be moved from its stock location on the fuel tank to the position shown here so the body could fit properly. The air filter's silicone elbow was reversed, also for additional body clearance.

DATA CENTER

VEHICLE TYPE RTR 1/8-scale, 4WD off-road buggy

BEST BUYER First-time racers and anyone looking for an affordable entry to the class

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Good

Parts fit and finish Good

Durability Good

Overall performance Good

SPECIFICATIONS

MANUFACTURER XTM Racing

MODEL X-Terminator

SCALE 1/8

PRICE (varies with dealer) \$499

DIMENSIONS

Wheelbase 12.84 in. (326mm)

Width 12.3 in. (314mm)

WEIGHT

Total, as tested 125 oz. (3,543g)

CHASSIS

Type Double deck

Material 3mm channelled aluminum

DRIVE TRAIN

Type Shaft-drive 4WD

Primary 13-tooth clutch bell/43-tooth clutch bell

Transmission ratio 3.31:1

Final drive ratio 10.87:1

Differentials 3 sealed planetary gear

Bearing type Shielded ball bearings

SUSPENSION

Type (F/R) Lower H-arm, upper wishbone/lower H-arm and adjustable upper link

Shocks Aluminum body oil-filled shocks with silicone dust boots

WHEELS

Type 1-piece plastic, standard 17mm hex

TIRES

Type Medium compound pin-spikes with foam inserts

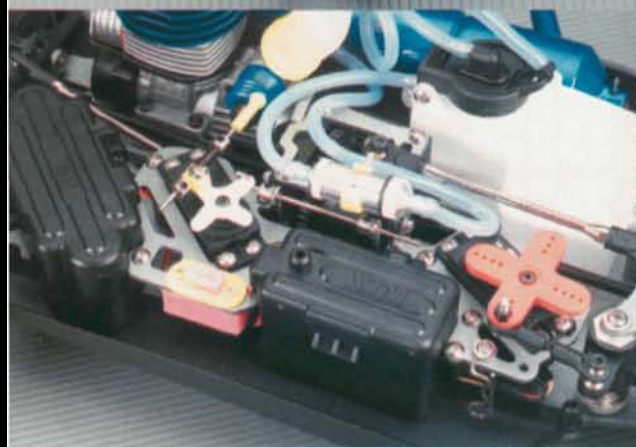
ENGINE AND ENGINE ACCESSORIES

Engine XTM 24-7 pull-start

Carburetor 2-needle slide carb

Exhaust Aluminum manifold and tuned pipe

Fuel tank 125cc baffled and filtered



Above: the front suspension has a unique reverse upper A-arm that surrounds the steering hub's C-carrier. Large turnbuckle adjusters are included on all the linkages. Left: the unique design of the radio tray has angled servo mounts and convenient snap-shut lids on separate receiver and receiver battery boxes.

THE X-TERMINATOR'S CHASSIS LOOKS ALMOST GALVANIZED.

KIT FEATURES

CHASSIS. Eighth-scale racing buggies require strong chassis to ensure proper suspension action and to withstand the often severe pounding that inevitably occurs when traversing uneven terrain at 40mph. With this in mind, the X-Terminator's 3mm-thick countersunk chassis has channeled sides to increase rigidity and molded mudguards to prevent the drive-train components from getting too dirty. This is standard buggy tech, of course, but the finish on the X-Terminator's aluminum chassis is unique. It's a hard coating of sorts, but it looks almost galvanized. Equally unique is the aluminum upper deck that places the steering and throttle/brake servos as close as possible to the chassis centerline and houses the receiver and onboard battery pack in separate molded boxes. The battery and receiver boxes are extra roomy and feature really handy snap-shut lids for easy access—no screws or body clips to mess with. The unconventional servo placement also seems to considerably simplify the steering- and throttle- and brake-linkage routing. Front and rear torque rods provide additional rigidity for the chassis.

DRIVE TRAIN. Like most racing buggies, the X-Terminator features a shaft-drive 4WD system with front, center and rear gear differentials and front and rear disc brakes that allow individual brake-bias adjustment. The diffs are O-ring-sealed, which means that they can be filled with thick silicone oil to aid tuning. The disc brakes feature highly polished steel rotors and steel calipers with fiber pads. Molded brake guides prevent the rotors from wobbling too much on the hex-shaped center outdrives. There are two brake discs—one for the front and one for the rear—and the molded rotor guides are able to accommodate extra discs, just in case you get the itch to run quad discs for extra stopping power.

Thick, steel dogbones extend from the center diff and are connected to the front and rear diffs via outdrive cups that mate with the internal, hard-steel ring and pinion gears. The center diff is equipped with a steel, 43-tooth spur gear. CV-style axles drive the front wheels and feature silicone boots to keep the axles free of dirt and debris. Steel dogbones are used in the rear. The entire drive train and front and rear wheels spin on shielded ball bearings.

SUSPENSION AND STEERING. The front and rear lower H-arms pivot on 3mm-thick hinge pins. Setscrews threaded into the front and rear suspension arms allow droop adjustment. Two lower shock-mounting positions are available on the front suspension arms, while the rear suspension arms have four positions. Unique reverse-mounted upper front wishbones capture the C-carriers for extra durability, and steel turnbuckles allow camber adjustment.

The rear suspension uses a conventional lower arm/upper camber-link setup with large molded rod ends and adjustable tie rods. Several rear upper camber-link mounting positions are available on the rear shock tower and hub carriers, and three upper arm-mounting positions are possible on the front shock tower to adjust the buggy's roll characteristics.



The well-featured rear suspension includes numerous shock-mounting positions and camber-link mounting positions and a standard rear anti-roll bar. Extra rear hinge-pin braces (not pictured) are included to allow various degrees of rear toe angle.

Adjustable steering links allow toe-angle adjustment, and cast-aluminum knuckle arms keep the tires pointed in the proper direction. An adjustable rear swaybar is also included to limit chassis roll.

Aluminum shocks are found at all corners. The shocks feature O-ring seals, silicone bladders and stainless-steel shock shafts with silicone dust boots. Snap-on preload spacers are included to adjust ride height. Particularly like that the internal shock pistons are retained with locknuts instead of E-clips. A conventional bellcrank/drag-link steering system with a built-in servo-saver pivots smoothly, thanks to the ball-bearing-supported aluminum drag link. The drag link also has several steering-rod mounting options to alter the buggy's Ackerman setting.

ENGINE AND ACCESSORIES. XTM's .247 engine provides the go power. This is one of the largest engines installed in any RTR 1/8-scale buggy, and the extra cubic inches are definitely noticeable when you goose the throttle trigger. The engine is equipped with a 9-fin heat-sink head; aluminum, brass and chrome (ABC) piston and sleeve construction; a 2-needle slide carb; and a pull-start mechanism. A 3-shoe clutch, aluminum flywheel and a bearing-supported, 13-tooth clutch bell are installed on the engine. An aluminum manifold, powder-coated, metallic-blue tuned pipe and large-element air filter are also included and installed for you. The engine's displacement is larger than is allowed by race-sanctioning organizations, so be sure to check with your local racetrack to make sure that it's OK to run with this larger engine before you fork over your entry fee.

BODY, WHEELS AND TIRES. The X-Terminator's three-color, screen-printed body arrives trimmed and mounted on the chassis. The paint scheme and blacked-out windows do not score high marks on the concours scale, but it's a faithful representation of a single-seat buggy body. The polycarbonate body shell is mounted securely on the chassis with three body clips (most 1/8-scale buggy bodies are secured with only two body clips). A large, bright yellow nylon rear wing is installed on adjustable molded wing mounts that feature aluminum center braces to add strength to this crucial area. Attractive 5-spoke wheels (also yellow) are included along with medium-

ELECTRONICS & ACCESSORIES



HITEC LYNX SPORT TRANSMITTER AND RECEIVER. The Lynx Sport 27MHz AM transmitter provides reliable reception and has a surprisingly long signal range. Steering and throttle trims, servo-reverse switches and low-battery LEDs are among the transmitter's features. The radio system includes a 4-cell battery holder and switch harness. The silicone switch cover is a bonus.

HITEC HS-625MG AND HS-3003 SERVOS. The X-Terminator is big and powerful, and that means a high-torque steering servo is required. The included HS-625MG servo has the torque and speed that are necessary to keep the buggy under control. Also, the "MG" signifies "metal gear," so the servo is even more up to the task of properly steering an 1/8-scale buggy. A standard HS-3003 faithfully performs the throttle and brake functions.

YOU'LL NEED

- 12 AA alkaline batteries (8 for the radio controller, 4 for the receiver pack).
- 20- to 30-percent nitro fuel
- Glow igniter
- Air filter oil
- 17mm wheel wrench
- Fuel

track test

XTM RACING XTERMINATOR RTR

compound pin-spike rubber racing tires and foam inserts. The tires are not factory-glued to the wheels, and that's a good thing if you want to go straight to the track and mount a set of aftermarket tires, but it's not so good if you want to get out and start bombing around as quickly as possi-

ble. You'll have to take a few minutes to glue the tires before you can go anywhere. The stock tires come with soft foam inserts and might hook up on really soft, loamy track surfaces. The rubber compound is pretty firm, and this makes the tires well-suited to high-mileage thrashing.

PERFORMANCE



THE X-TERMINATOR EASILY CLEARED THE TRACK'S MANY DOUBLES, TRIPLES AND TABLETOP JUMPS.

With the XTM 24-7 engine properly broken in and tuned, it took only a couple of tugs on the pull-starter cord to fire it up. Subsequent restarting with fuel in the carburetor took just one tug. The engine held a nice steady idle, and the low-pitched sound produced by the tuned exhaust system is music to any nitro buff's ears. I was immediately impressed by the engine's seemingly endless powerband; it produces so much bottom-end punch that it easily lights up all four tires whenever I stab the throttle. The power just keeps on building, and the tires search for traction until the buggy tops out. A fast, 8-pound buggy needs powerful brakes, and from full speed, the X-Terminator's dual-disc brake system brought it to a halt in less than 10 feet.

The X-Terminator was a blast to drive around in front of my house, but I was dying to see how it would do at my local track. The X-Terminator made the street-to-track transition without any major wrenching. I adjusted the ride height and messed around with the brake bias to give it more rear braking, but that was about it.

LIKES

- Powerful and reliable engine.
- Innovative servo and radio equipment placement.
- Many cool extra features, such as universal-joint dust boots, double rear body posts, sealed planetary gear diffs, bellcrank bearings and a silicone switch-harness cover.

Because the track was slick, I needed a light throttle finger to prevent the buggy from completely looping out when powering out of the turns; after a few practice laps, though, I had the X-Terminator making good time. The high-torque steering servo is a bonus, and it controls the buggy well. Like most 4WD vehicles, the X-Terminator pushes slightly when under power, but let off the throttle momentarily or tap the brakes, and that's all you need to

get it to turn tightly.

The X-Terminator easily cleared the track's many doubles, triples and tabletop jumps. It launched flat and landed softly without drama, but the relatively stiff suspension caused it to get out of shape in the moguls and rhythm section.

After running through several tanks of fuel, I pulled the buggy into the pits. I removed the rear swaybar, replaced the rear shock oil with 30WT and then went back at it. Now the X-Terminator was much more composed, and I zipped through the track's troublesome sections. I'm sure that with a little more suspension tuning, I could have this thing dialed!

THE VERDICT

With its powerful 24-7 engine and well-appointed chassis, the X-Terminator offers plenty of bang for the buck. The engine ran strongly and very reliably, and XTM's factory assembly is excellent. The screen-printed body and clever details such as the silicone axle boots are also welcome, and I was impressed by how easily I got the X-Terminator hooked up on my track. It's hard to believe this is the XTM guys' first crack at a buggy; they really got it right!

Sidewinder Backyard Basher Fuel

As recommended, I used 20-percent nitro to run the X-Terminator. When the XTM 24-7 was properly broken in, it started on the first couple of tugs every time, and hot restarts were not a problem. The engine also ran cool—an indication that it was getting plenty of life-giving lubrication.



Magnum Glow Igniter

I always carry an Magnum alkaline-powered glow starter in my toolbox in case my rechargeable glow starter dies. Alkaline batteries provide slightly more voltage than Ni-Cd batteries, and the extra power is noticeable when you install the glow igniter over the plug and crank the engine.

SOURCE GUIDE

HITEC RCD INC.
(858) 748-6948; hitecred.com.

MAGNUM distributed by Global Hobby (714) 964-0827; globalhobby.com.

PRO-LINE (909) 849-9781; pro-lineracing.com.

HITEC RCD INC. (858) 748-6948; hitecred.com.

SIDEWINDER distributed by Morgan Fuel; (800) 633-7556 morganfuel.com.

XTM RACING; distributed by Global Hobby Distributors (800) 854-8471; globalhobby.com.

DISLIKES

- Additional trimming of the body is required for a proper fit.
- Fuel filter and air filter had to be remounted to allow body to fit properly.

THE COMPETITION

	CHASSIS	BALL BEARINGS	ENGINE	PIPE	RTR	RADIO	PRICE*	REVIEWED
Hot Bodies Lightning	3mm aluminum	Yes	Force 21	Aluminum	Yes	Air Blazer	\$420	09/02
DuraTrax Axis	3mm aluminum	Yes	Torq 21	Aluminum	Yes	Futaba	\$400	05/02
Kyosho MP7.5 Sports	3mm aluminum	Yes	GS-21R	Aluminum	No	None	\$490	02/02
OFNA 9.5 RTR	3mm aluminum	Yes	Force 21	Aluminum	Yes	Air Blazer	\$499	06/02 RC Nitro
OFNA Hyper 7 RTR	3mm aluminum	Yes	Hyper 21	Aluminum	Yes	Air Blazer	\$550	03/02
XTM X-Terminator	3mm aluminum	Yes	XTM 24-7	Aluminum	Yes	Hitec Lynx	\$499	07/02

*Price varies with dealer.



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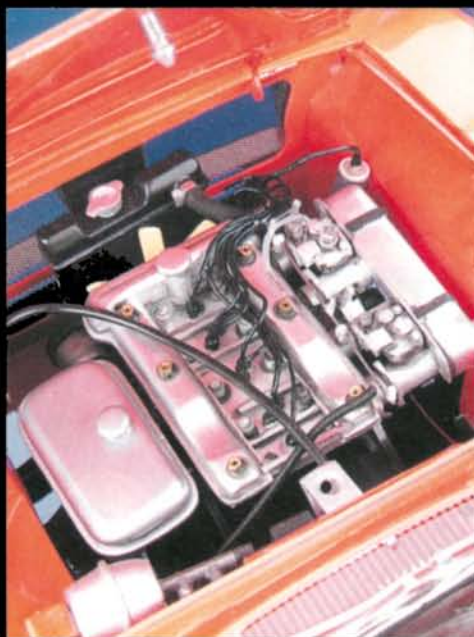
Mike Villena's
ALFA ROMEO Giulia Sprint GTA

READER'S RIDE OF THE YEAR

by Bob Hastings

"READERS' RIDES" IS ONE OF OUR FAVORITE departments because it gives us the chance to see what vehicles you're into and the cool projects that you've created. Selecting only eight for publication each month from everything that we receive is difficult, but it's not nearly as tough as choosing one as our favorite from the preceding 12 months. Our readers' rides in the past year included everything from

brass-tube monsters and big-buck buggies to tricked-out tourers—even a duck in drag (drag racing that is). But only one machine can be the 2002 Reader's Ride of the Year! That honor goes to Mike Villena of Chicago, IL, for his Tamiya Alfa Romeo Giulia Sprint GTA. Mike and his 1964 repli-racer got the nod not only for the craftsmanship and astounding detail, but also for the unique subject choice.



Mike created a scale engine out of styrene plastic. The cylinder head and valve cover comprise more than 30 separate pieces, and another 20 make up the side draft carbs and intake cover. Each piece of plastic had to be glued, filled and sanded to shape. After the meticulous assembly, Mike painted the engine with Metalizer paint and buffed it using cotton swabs and tissue. The radiator is made out of Evergreen plastic; various channels and shapes make up the radiator core, and it's sheeted with simulated railroad-car siding. The fan, belt and pulley are also constructed of Evergreen strips and shapes.

The body was finished with Pactra Bright Red spray paint, BareMetal foil was used for the exterior chrome and white Letraset numbers were used for the race markings.



WHAT MIKE WINS AS THE 2002 READER'S RIDE OF THE YEAR

Cash money, yo! Mike will receive \$500 in universally spendable green gift certificates courtesy of RC Car Action. Five Benjamins can buy a lot of sheet styrene!



1



2



4



5



6

1. The stock Lexan Alfa body was meticulously cut to remove the trunk lid. Mike added an authentic sub-frame to support the trunk's cutout and made a lip for the body opening. He hinged the components, and the trunk lid opens and closes with the precision of a die-cast model.

2. Mike cut the hood and trunk from the stock body, added a styrene substructure and then hinged them to open properly. Check out the scratch-built trunk compartment complete with spare tire, hold-down, tool bag and, of course, a hammer for those fine adjustments.

3. The rear quarter window is hinged to swing outward, and it has an authentic-looking latch, too. The chrome trim around the window frame was created using BareMetal foil trim.

4. A styrene subfloor fits neatly around the stock Tamiya M-chassis components without interfering with their operation. Here, you can see the spare-tire well and the exhausting (ha!) detail of the homemade muffler.

5. The driver figure started out as a James Bond action figure; Mike gave 007 a beauty makeover that included an authentic Italian driver's suit, eyeglasses and racing gloves. Of all of the handmade components on this car, Mike says that the toughest to make was the steering wheel. After three attempts, Mike settled on a flexible plastic rod to create the faux-wood and metal 3-spoke wheel.

6. Little details mean a lot; check out Mike's dash cluster, with control knobs and key fob, too.

THE SPECS ACCORDING TO MIKE

Original kit: Tamiya Alfa Romeo Giulia Sprint GTA

Total building time: more than 100 hours. (gulp!)

Total coffee consumed while building: let's just say that I single-handedly subsidized the country of Columbia, and Juan Valdez is now driving a Ferrari.

Hardest part to make: the steering wheel; it took three tries.

If I had to sell it: \$500 to \$1,000—but the buyer would

have to be a serious collector or a toy-car museum.

What's up with the driver?: I don't speak eye-talian; actually, it's a James Bond action figure.

Best advice for budding scale enthusiasts: don't attempt to scratch-build anything unless you have a tile or wood floor.

Carpeting will ensure that you will have to build multiples of the same part even if you only need one. Don't take the driver's



Mike Villena

license vision test after a serious scratch-building session. You'll be permanently classified by the Department of Motor Vehicles as "Pedestrian Only." ■



3

RACER NEWS

SPONSORED BY

KYOSHO
THE FINEST RADIO CONTROL MODELS

BY GEORGE M. GONZALEZ & JASON SAMS

HPI'S CHINESE CONNECTION

Japan's Daisuke Yoshioka drove his LRP-equipped HPI Pro 3 to International-class victory at the China National Championship—the country's biggest RC event. In addition to HPI's new graphite chassis and a bunch of other factory options, Daisuke ran an all-LRP electronics setup, including LRP-matched Powers R3300 "Factory Team" cells and an LRP Fusion Phase 4 motor.

Going once ... going twice ...

Gone! With the help of eBay, Trinity auctioned off the very first Monster Stock motor to roll off the production line. The auction motor was custom-tweaked and autographed by motor master Jim Dieter, and a Monster Stock hat was part of the deal. The final price? \$152.50, as bid by "drthre." He must be a swell guy, since he's known for "speedy payment, smooth transactions" and "very fast payment, excellent contact." Trinity will donate the proceeds to its Race Support Program. This helps track operators to run successful events for all you racers out there.



SITE SEEING



Check out this site for some of the wildest paint schemes on the Web. Photos and painting tips are easily accessible, and the creators claim that their site is the largest archive of RC car photos on the Internet.

BOARD WALK

FROM THE
RADIOCONTROLZONE
.COM BULLETIN BOARD

Will Ni-Cds become extinct?

PUDDER: When I asked the owner of my local hobby shop about the prices of some Ni-Cd packs, he said, "Why bother with Ni-Cds when you can buy NiMHs?" **GRIZZBOB:** I agree; Ni-Cds are becoming obsolete. Newer generations of NiMHs put out as much or more voltage than the best Ni-Cds (with equal or better internal resistance), have much more capacity and are becoming more reliable. **KRISH.925:** Most people don't use NiMH batteries because of the price. People who are new to the hobby don't have huge budgets to blow, so they still spend their money on Ni-Cd batteries.

Got traction? Too much!

SLITCH: I have a XXX-S with Jaco purple foam tires, and I race it on carpet. When I turn too hard, my car flips a couple of times, which usually ends my race. What can I do?

CRAZY CANUCK: You should add front and rear swaybars. You need fairly thick ones for foam tires.

INSPGADGT: Lower the ride height, run stiffer swaybars, replace the shock oil with thicker oil and run stiffer springs all the way around.

27MHz vs. 75MHz?

FASTRC: I'm confused. What's the difference between an FM 27MHz radio and an FM 75MHz radio? **BUFF:** 27 band is just another range of frequencies. In 75 band, you get channels 60 through 90. In 27 band, the only frequencies are 1 through 6.

BE HEARD! LOG ON AT
RADIOCONTROLZONE.COM

new drivers, ladies man for team Orion

Chris Tosolini and Mike McMahon join Team Orion as on-road racing specialists. Chris has been a respected on-road racer for years, with multiple U.S. national championships to his credit, and Mike is a fast racer who brings professional experience to his new team. The two drivers' efforts will



Mike McMahon



Chris Tosolini

and marketing crew. Nice desk, Brian; we know you're working hard when there's exactly one sheet of paper on your desk, and you've got "Hot or Not" up on your screen.



Brian Dunbar

She has no idea

Pro-Line's Scott Hughes is leaving the life of single-guy debauchery to settle down with a nice girl; he has asked his longtime girlfriend, Lorinda, to be by his side for the rest of his life (which might not be that long, as anyone who has seen Scott at the controls of his Yamaha R6 will attest). Unfortunately for the ladies, Lorinda said yes, and Scott is officially off the market. Look on the bright side: he'll probably get really fat.



"Weren't you just running around naked on a hotel roof?"

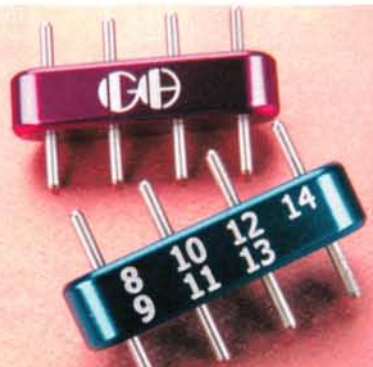
—Just about every racer's reply to Scott Hughes when he told them about his wedding plans.

SPEED SHOP



DURATRAX IntelliSpeed 8T racing ESC

DuraTrax is staking a claim in the competition ESC category with the 8T. It can spin hot-mod motors down to 8 turns (hence the "8T") and features a full range of tuning adjustments, including drag brake, drive frequency, current limiting, min./max. braking and more. There are even Quick Start and Turbo modes, which are adjustable via the ESC's single pushbutton. IntelliSpeed 8T ESC—DTXM1080; \$90. DuraTrax; distributed by Great Planes Model Distributors (800) 682-8948; duratrax.com.



GOLDEN HORIZONS Micro RS4 pinion caddy and front diffs

The Micro RS4's tiny pinions are easy to lose, but you'll always know where yours are when you press them onto GH's clever caddy, which is numbered for easy gear selection. GH also offers some new tuning options for the HPI car, including a front one-way system and adjustable front ball differential. Pinion caddy—02338P (purple), 02338B (blue); \$6. Front one-way differential—GH02340; \$25. Front ball differential—GH02339; \$25. Golden Horizons (604) 331-2526; ghobby.com.

HPI Micro RS4 Servo-Saver and Dual-Link Tie-Rod kit

Hardcore Micro RS4 racers take note: HPI now offers an adjustable tie-rod set for your mini machine, so you can add toe-in to the Micro RS4's tuning possibilities. Everything you need to install the setup is included, along with HPI's new servo-saver (also available separately). Micro Servo-Saver set—73435; \$4. Dual-Link Tie-Rod set (includes servo-saver)—72490; \$13. HPI Racing (949) 753-1099; hpiracing.com.



PEAK RACING PowerFlo GP3300 World Pack

Rick Hohwart and his Peak crew now have the latest GP3300 super cells strapped into their LavCo matchers for the complete PowerFlo regimen of high-voltage zapping, triple cycling and matching. After a 30A workout, only the best cells are sorted into World Packs for pro-caliber competition. For the rest of us mortals, Peak offers the more affordable National and Club packs. PowerFlo GP3300 World Pack—PEK43061; \$120. Peak Performance (714) 692-8533; peakmotors.com.



LAST LAP

In an effort to keep the racing cleaner and closer, one-way pulleys and one-way diffs were not allowed at the 2002 Reedy TC Race of Champions. Should a similar rule be adopted for all national and world-championship TC events?

No! It isn't like a one-way is outrageously expensive and therefore an advantage only to drivers with factory support; I say, if you have the skills to exploit a one-way, you should be allowed to exploit a one-way.
Kevin Paine

I hate one-ways; they make my car so touchy to drive that any benefits I might see are wasted on spinouts. If I were racing at a big event, I'd like to know I wasn't automatically at a disadvantage by running full-time 4WD.
Karl Atkins

At the highest level of pro competition, there should be no restraints. Motors, tires and one-ways should all be left up to the driver.
Leonard Monroe

I think it's dumb. Many cars include one-ways. Am I supposed to spend extra money to "detune" my car so I can race it, when the object of racing is supposed to be to "go as fast as possible"? If you can't drive a one-way, that's your problem. I can.
Scott Hoffman

No. Nats and Worlds are pro events, and the pros should be able to drive whatever they want. They can handle it.
Seane Keef

I thought that all tracks were one-way tracks, because driving on the track in the wrong direction isn't allowed. Boy, the races must be really exciting when the cars are going in opposite directions at the same time!
Mark Mullan

NEXT MONTH'S QUESTION

If you could race only one class of RC for the rest of your life, which one would you choose, and why?

Respond by clicking "Last Lap" at rccaraction.com.

UNDER THE HOOD

David Jun's
TAMIYA F201



The F201's suspension is realistic and functional. Rocker arm and steering-link tie rods make tuning easier and more accurate. The optional aluminum upper rocker arms pivot on ball bearings for smooth performance. Dave used optional olive front springs, which are the stiffest available. These Pit Shimizu tires were used in four qualifying rounds, three main events and several practice runs, and they still look new.

RACE GEAR

Radio Futaba 3PJ
Receiver Futaba R123P
Onboard battery Reedy Sanyo
3000 HV
Steering servo Futaba S9402

Motor Tamiya Super Touring
14-turn double
Tires Pit Shimizu firm
Body Tamiya Ferrari
ESC Novak GT7
Gearing 20/55

SETUP

	Front	Rear
Camber	-1 degree negative	-1 degree negative
Toe-in	0 degree in	2 degrees in
Ride height	4mm	3.5mm
Shock length*	58mm	80.7mm
Down-travel**	5mm	5mm
Upper pillow-ball gap***	4mm	3.8mm
Lower pillow-ball gap	5mm	5mm
Rocker-arm length	49.7mm	48.3mm
Shock oil	Tamiya 3000	3000
Spring	Olive (firm)	Black (soft)
Preload clip	None	3mm
Rocker arm	Aluminum w/2mm spacer	Aluminum w/no spacers
Diff tension	Very tight	Tight
Fiberglass stabilizer	Not used	—

* Shock and rod measurements are from end to end.
** Down-travel measured with the chassis on a tweak board and the tires removed. Measurement is the distance between the board and the bottom of the knuckle arm.
*** Pillow-ball gap is the distance between the knuckle arm and the suspension arm.

FACTORY & AFTERMARKET OPTIONS

- Turnbuckle shaft set—item no. 53513
- Reinforced prop shaft—53514
- Racing spring set—53515
- Aluminum motor mount—53518
- Aluminum rocker arm (2 sets)—53519
- Lightweight diff joint (2 sets)—53521
- Universal shaft (2 sets)—53522

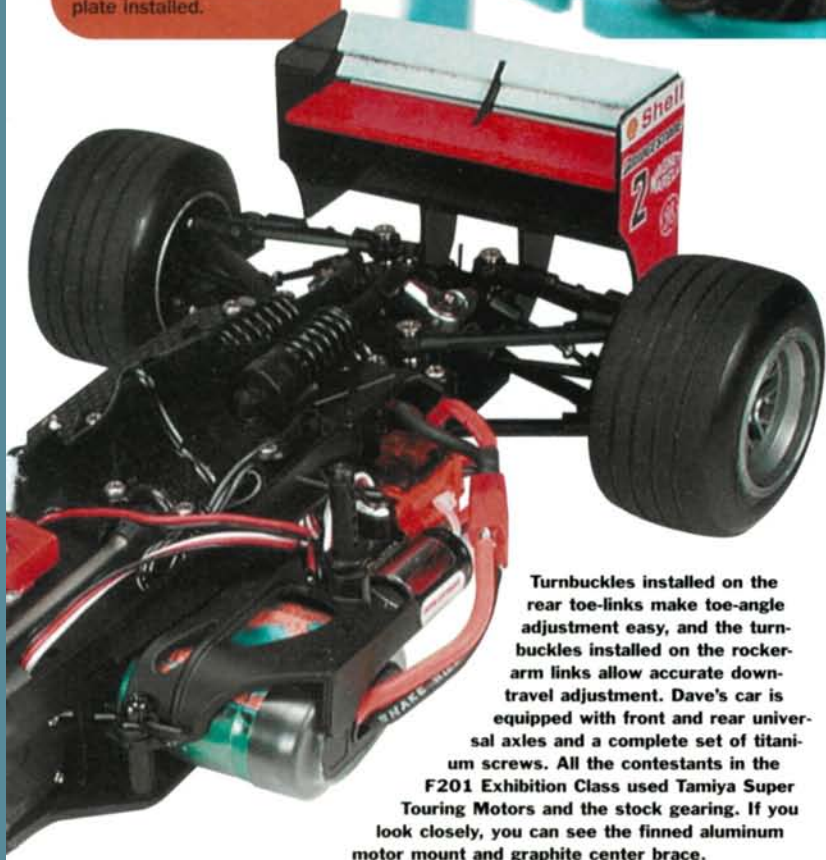


That's a Novak GT7 ESC and standard-size Futaba FM receiver stuffed into the tight radio tray. Dave used Deans Ultra Plugs to connect the Reedy 3000 NiMH battery pack to the ESC.



FACTORY DRIVER HOT MOD

Dave installed one Tamiya black O-ring above the shock bladders inside the front shocks. With the O-ring in place, the bladder is not able to compress fully inside the shock cap. This makes the front shocks stiffer and better able to handle the chassis roll demands without the fiberglass front stabilizer plate installed.



Turnbuckles installed on the rear toe-links make toe-angle adjustment easy, and the turnbuckles installed on the rocker-arm links allow accurate down-travel adjustment. Dave's car is equipped with front and rear universal axles and a complete set of titanium screws. All the contestants in the F201 Exhibition Class used Tamiya Super Touring Motors and the stock gearing. If you look closely, you can see the finned aluminum motor mount and graphite center brace.



SOURCE GUIDE

FUTABA distributed exclusively by Hobbico/Great Planes Model Distributors Co. (800) 637-7660; futaba-rc.com.

NOVAK ELECTRONICS INC. (949) 833-8873; teamnovak.com.

PIT SHIMIZU distributed by RC Imports (408) 377-2361; rcimports.net.

REEDY a division of Team Associated (714) 850-9342; teamassociated.com.

SANYO (619) 661-6620.

TAMIYA AMERICA INC. (800) 826-4922; tamiyausa.com.

TEAM ASSOCIATED (714) 850-9342; teamassociated.com.

W.S. DEANS CO. (562) 634-9401; wsdeans.com.

5 QUESTIONS

DRIVER: Dave Jun

AGE: 30

LAST BIG WIN:

Tamiya TCS F201

Exhibition Race

SPONSORS: Tamiya,

Novak, Reedy, Futaba, Pro-Line

When I'm not racing, I drive my real car and hang out with my friends.



RC CAR ACTION: Congratulations on winning the TCS F201 Exhibition Class. You were up against some tough competition; how in the world did you manage to keep Barry Baker at bay? You guys went fender to fender during every Main.

DAVE JUN: Thank you. It wasn't easy, that's for sure. Barry is, without question, one of the best on-road drivers in the business. Our cars were equal in performance, so it just came down to who made a mistake. The first two Mains were wheel to wheel for most of the race, and it was quite a show for the crowd. Barry would brake late going into the infield, while I liked to slide the car in. People came up to us and said it looked like the Reedy Race.

RCRA: How does the F201 chassis differ from a typical 4WD touring car in terms of setup and driving?

DJ: Funny you should ask that because I set my car up just as I would my 414MIL. The F201 has a very realistic, functional suspension that responds well to adjustments. Driving is also extremely responsive. The F-201 class was the fastest all weekend, even faster than the GT-1, which shows how well the cars really handle.

RCRA: I understand that Tamiya is making the F201 class a permanent addition to the TCS venue. Do you think it will become a popular class?

DJ: I think it will be very popular because it combines the tunability and driving excitement of sedans with scale open-wheel F-1. I wouldn't be surprised if it became the most popular class. And did I mention they're real fast?

RCRA: On a completely different topic, I hear that you have started racing 1/8-scale cars. Which chassis do you race, and do you have plans to compete at the upcoming IFMAR 1/8-scale Worlds at KZ Speedway in Sun Valley, CA?

DJ: Yes, I've actually raced 1/8 scale a couple of times. Ironically, Barry and I were teammates running the Harm car at the 1/8-scale Nats in 2000. Rick Hohwart won, and I came in second. I think Barry was third. I just got hooked up with a Techno Kit, and the car is awesome. Yes, I plan to race in the Worlds and maybe in the Nationals coming up.

RCRA: Do you think that you have a good chance to win the 1/8-scale Worlds? Who do you think will be the fastest drivers attending?

DJ: I don't expect to win my first 1/8-scale worlds, but I'll definitely try. I've heard that the European drivers are quick, but Brian Kinwald and Tyree Phillips will also be running the Techno Kit, so we should have a strong team.

HITEC PARKING
CHALLENGE

FROM THE BOX TO THE TRACK

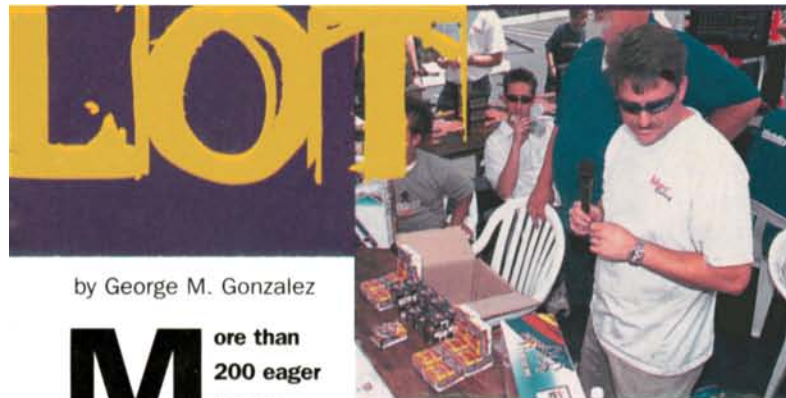
Team Associated sales manager Gary Owen showed up on race day with a brand new Nitro TC3 RTR still in the box. The only tools he had were the ones that are included with the model, plus a glow-plug igniter and some fuel. Gary broke in the engine during the open-track practice session and was still at it during the first qualifier. I was amazed at how hooked up his car was with the stock treaded tires. He had plenty of traction, but the car was geared a little tall for the tight, technical track. Despite the less than perfect gearing, Gary finished in fifth place in the 15-minute Nitro Expert B-main. Way to go, Gary!



HPI employees, Frank McKinney and Thad Garner get their Super Nitro cars ready for one of the heats. These big cars are always exciting to watch—and to drive!



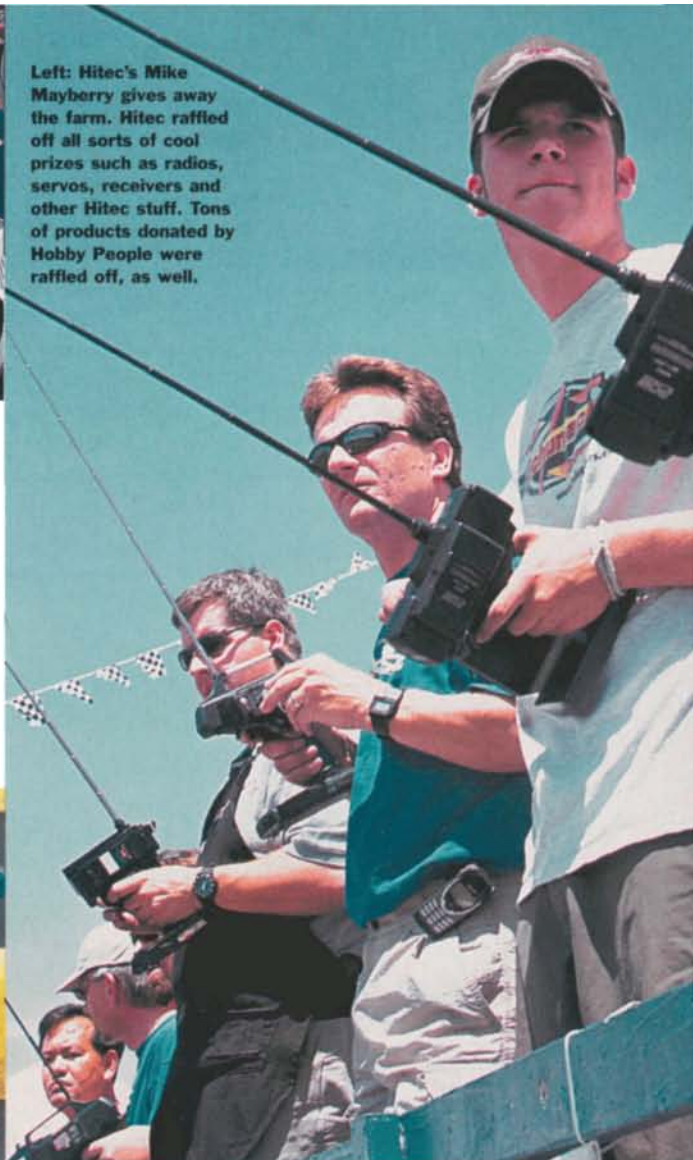
FULL-
CONTACT
TOURING



by George M. Gonzalez

More than 200 eager racers descended on the Hitec RCD parking lot in San Diego for the Third Annual Hitec/Hobby People Parking Lot Challenge. For the first time, the race was extended to two full days to accommodate all the racers who wanted to compete. With 10 racing classes, ranging from Rookie Stock Sedan to Super Nitro touring, the contestants had many electric- and nitro-racing options to suit their particular skill levels and vehicle types. Many well known RC celebrities, including Atsushi Hara, Cliff Lett, Travis Amezcua, Todd Hodge, Greg Hodapp and Kris Moore, dropped by to mix things up with the Expert Class contestants. Here's how it all went down.

Left: Hitec's Mike Mayberry gives away the farm. Hitec raffled off all sorts of cool prizes such as radios, servos, receivers and other Hitec stuff. Tons of products donated by Hobby People were raffled off, as well.

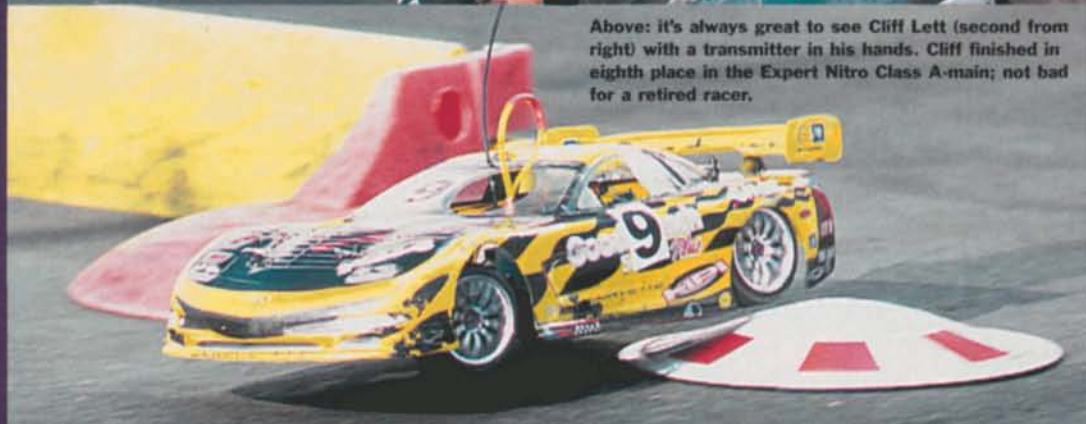


Above: it's always great to see Cliff Lett (second from right) with a transmitter in his hands. Cliff finished in eighth place in the Expert Nitro Class A-main; not bad for a retired racer.

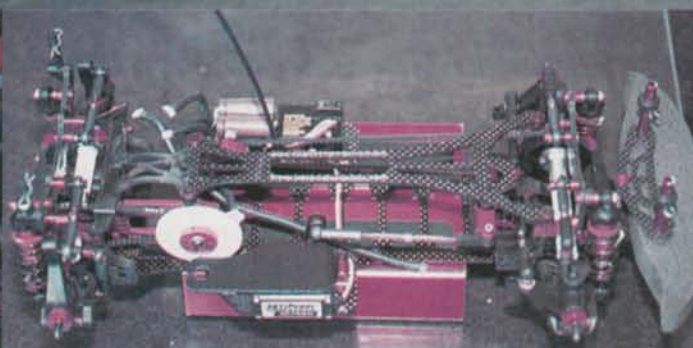
RENEGADE RACETRACK

The same modular plastic track system that Hobby People uses at all of its parking-lot races was erected on the front parking lot. If you've ever competed in one of Hobby People's parking-lot races, you know that the modular track system's elevated corner markers can launch cars into space, and the tall lane barriers can shift and move with each crash. Besides flipping cars right-side up, the turn marshals were also kept busy performing track maintenance during every heat.

The brutal track conditions turned many of the qualifiers and mains into total hackfests—especially in the Rookie and Sportsman classes as the drivers fought for position. The action in the Expert classes was pretty rough as well, but most of the carnage was the result of cars being launched off the corner markers into traffic. The rough track conditions certainly upped the thrill factor, though.



Below: Team HPI/Team Orion factory driver and IFMAR world champ Atsushi Hara preps some tires for one of the qualifiers. He assigns each tire an ID number and notes data on track temperatures and overall conditions. This guy is thorough! Check out Hara's HPI Pro 3; this thing's pimped out to the max! All of the graphite and purple-anodized aluminum hop-ups that HPI and Hot Bodies offer are bolted onto this car.



ROOKIE STOCK SEDAN

FIN	QUAL	DRIVER	CHASSIS	MOTOR	BATTERY	ESC	RADIO	TIRES	BODY
1	1	Alex Lau	Yokomo	Handout	Team Orion	LRP	JR	Sorex	Trinity
2	4	Justin Lew	Associated	INS	Team Orion	Novak	Hitec	Sorex	Protoform
3	2	Sean Coy	Associated	INS	Trinity	Novak	Futaba	INS	INS

EXPERT MOD SEDAN

1	1	Albert Guardado	Losi	Peak	Peak	Novak	JR	Sorex	Losi
2	3	Dave Wilson	Losi	Peak	Peak	Novak	INS	Sorex	INS
3	2	Kurt Wenger	Associated	Reedy	Reedy	LRP	Airtronics	Sorex	Protoform

SPORTSMAN MOD SEDAN

1	1	Travis Lawrence	Losi	Trinity	Trinity	Novak	INS	INS	INS
2	0	John Peterson	Associated	Trinity	Trinity	Novak	Futaba	Sorex	Protoform
3	4	Jose Molina	Associated	Bonzai	Pro-Match	Novak	Airtronics	Yokomo	Protoform

SPORTSMAN STOCK SEDAN

1	0	Mark Wry	Associated	Trinity	Reedy	LRP	Airtronics	Sorex	INS
2	2	Jimmy Cline	Losi	Peak	Peak	Novak	Airtronics	Sorex	INS
3	1	Hy Sao	Associated	Trinity	SMC	Novak	Airtronics	Sorex	INS

STOCK SEDAN

1	1	Steve Allen	Losi	Fantom	Trinity	DuraTrax	Airtronics	Sorex	INS
2	2	Kevin Smith	Losi	Trinity	Trinity	Novak	Airtronics	Sorex	Trinity
3	4	Mitchell Young	Losi	Bonzai	SMC	Novak	Airtronics	Yokomo	Protoform

EXPERT STOCK SEDAN

1	2	Travis Lawrence	Losi	Trinity	Trinity	INS	INS	INS	INS
2	3	Albert Guardado	Losi	Peak	Peak	Novak	JR	Sorex	Losi
3	1	Fill Jaenkov	Associated	Reedy	Reedy	LRP	Futaba	HPI	Protoform

FACTORY MOD SEDAN

1	1	Greg Hodapp	Losi	Peak	Peak	Novak	Airtronics	Sorex	Losi
2	8	Travis Amezcua	Associated	Reedy	Reedy	LRP	Airtronics	Sorex	Protoform
3	5	Jay Neill	XRay	Reedy	Trinity	Novak	Airtronics	Sorex	Trinity

NITRO SPORTSMAN

1	3	Brian Sullivan	Kyosho	Mugen	RB	Blue Thunder	Airtronics	Panther	OFNA
2	2	Joe Hegmann	Yokomo	Nova	Trinity	Red Line	Airtronics	Take Off	OFNA
3	4	Haz-Mat	HPI	O.S.	Paris	Sidewinder	Futaba	HPI	OFNA

EXPERT NITRO

1	1	Kris Moore	Mugen	Mugen	Rex	Mugen	Airtronics	Fast	Mugen
2	4	Robbie Collins	Mugen	JP	Nova	Mugen	KO	Fast	Mugen
3	2	Jay Williams	Associated	Mugen	Associated	O'Donnell	JR	Jaco	OFNA

SUPER NITRO

1	1	Thad Garner	HPI	HPI	HPI	HPI	Airtronics	HPI	Pull-start
2	2	Rich Taylor	HPI	Nova	Paris	Trinity	Hitec	HPI	XTM
3	5	Carlos Ledezma	Kyosho	Kyosho	OFNA	Trinity	Airtronics	Kyosho	Pull-start

INS—Information not supplied by driver

BLEW CREW TO THE RESCUE

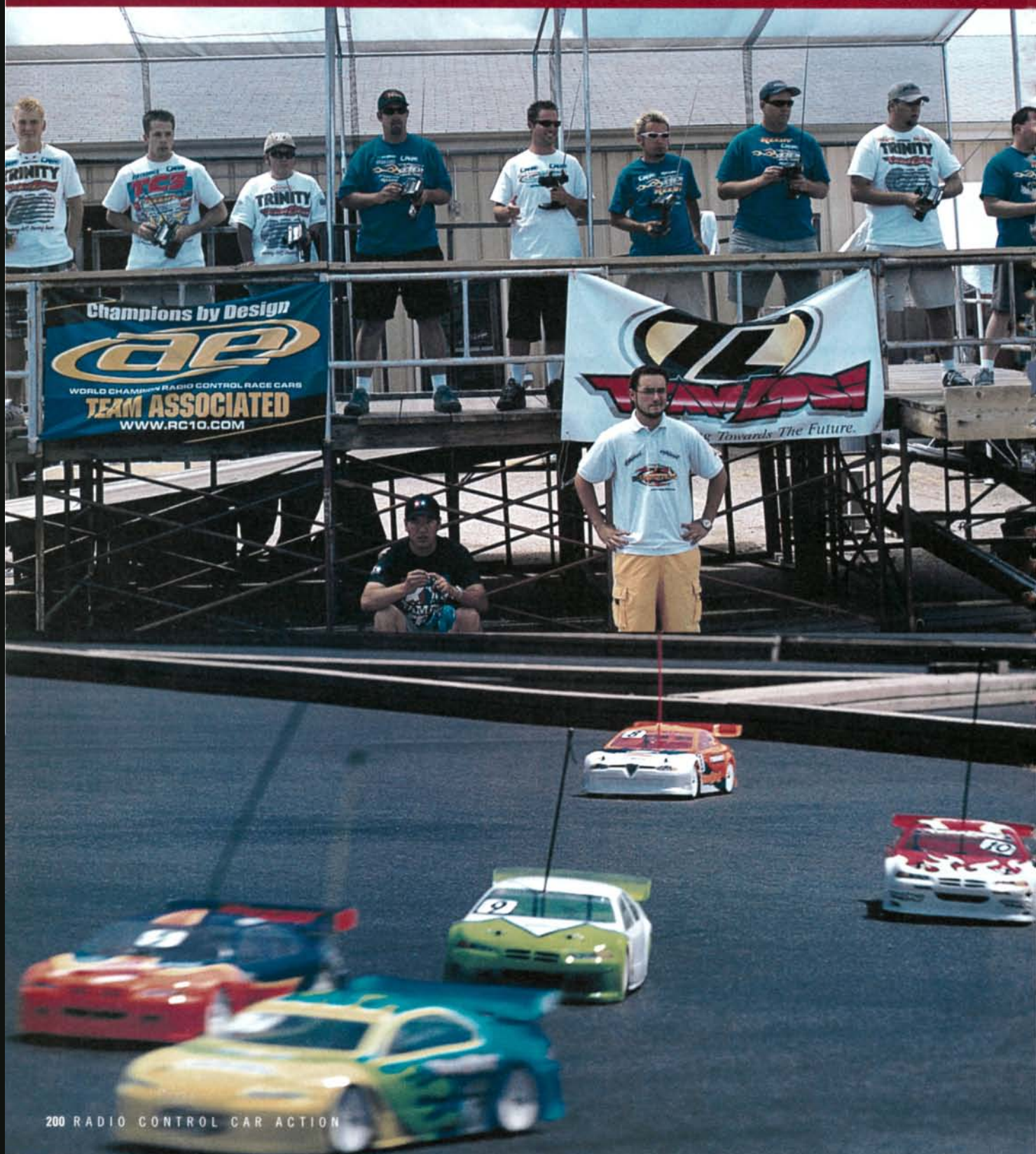
The Hobby People Blew Crew managed the event and took care of the track setup and transponder lap-counting system. The Hitec staff raffled off excellent prizes, including complete radio systems, servos, receivers and T-shirts. If that wasn't enough, Hobby People donated complete car kits, speed controls, motors and many other very fine prizes to ensure that everyone who attended walked away with some great stuff. The winners in the A-main were each awarded cool trophy/car stands and machined-aluminum chassis droop gauges; the second- and third-place winners earned plaques.

UNTIL NEXT YEAR

The Third Annual Hitec/Hobby People Parking Lot Challenge was truly a fun competition. Very few events cater to sportsman drivers, so I applaud the staff at Hitec RCD and Hobby People for supporting the "regular guys." The track was brutal, but it only added to the excitement and kept the drivers on their toes throughout the weekend. In addition, many racers won some cool (and expensive) products and got the rare opportunity to race with and learn tips from some of RC's legends. Hope to see you all there next year. ■

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ATIONALS

■ TRINITY ■ DRAGON RC

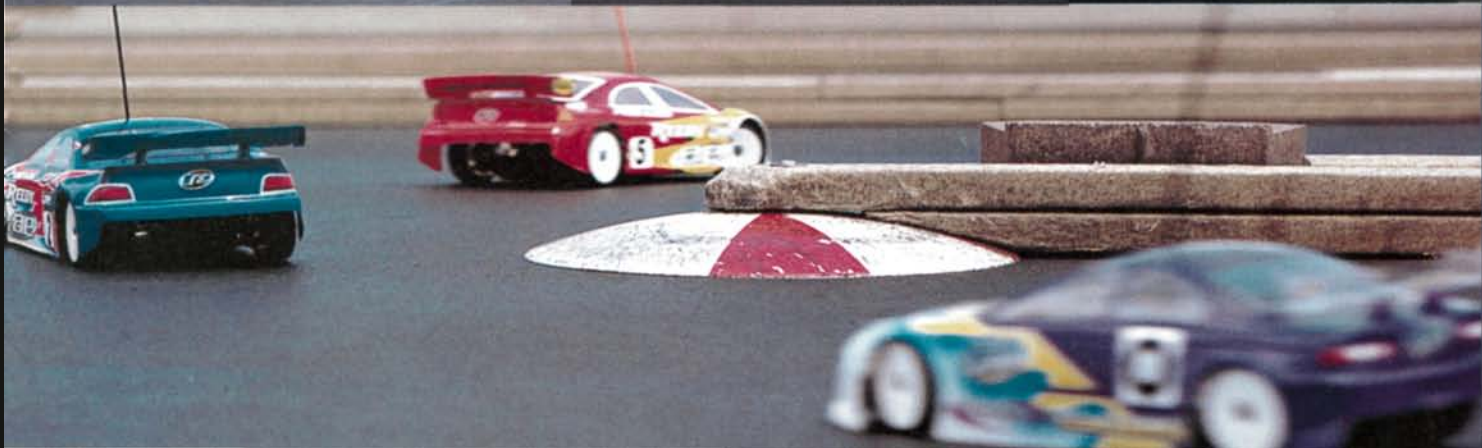
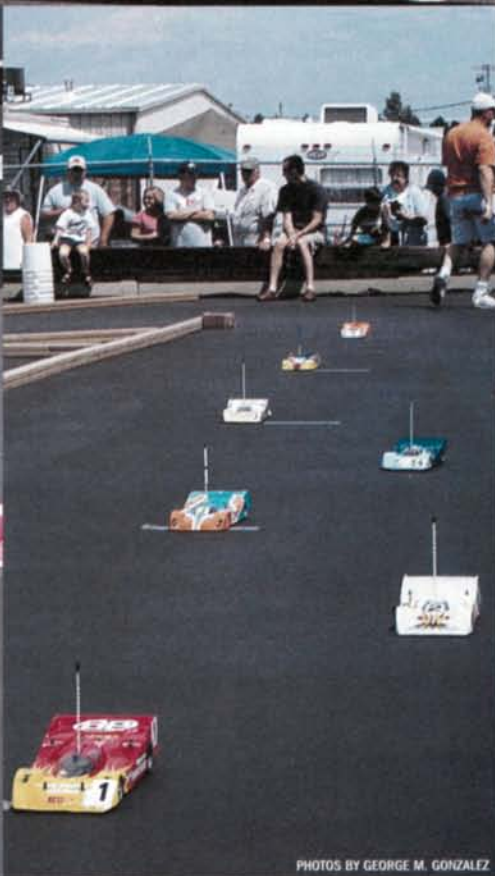
by George M. Gonzalez

Associated sweeps the carpet!

The ROAR On-Road Electric Nationals at MOHR RC Raceway in Aurora, CO, attracted more than 200 of the best touring car and $\frac{1}{12}$ -scale racers from around the country and gave everyone a weekend of high-voltage racing action.

Touring Car Modified was the showcase event; many of the top names in RC racing battled for the honor and bragging rights associated with winning a national championship. Touring Car Stock was a close second in terms of attendance, and the new Spec 2-Door Touring Car Exhibition class also drew many contestants. The $\frac{1}{10}$ -scale Pan Chassis classes are no longer a part of this event, but $\frac{1}{12}$ -scale 4-Cell Stock continues to grow.

PHOTOS BY GEORGE M. GONZALEZ





Scotty Ernst sewed up 1/12-scale 4-Cell Stock; that's him in the center, flanked by second-place finisher Michael Bruce (left) and third-place driver Randy Joslin.

THE ACTION

■ **1/12-scale 4-Cell Stock.** TQ Scotty Ernst was the man to beat; he won the first Main, but it didn't come easily. Billy Bowerman and Vincent Ringler pursued him throughout. Michael Bruce picked up the win in the second Main, but Ernst's second-place finish in the A2 kept him in the running for the overall championship, so he didn't take any chances in the final Main; he drove his Team Associated 12L3 like a "Grand Theft Auto" video-game car to ensure that he'd cross the line first. Ernst is now the ROAR 1/12-

scale 4-cell Stock champion; Bruce and Randy Joslin took second and third, respectively.

■ **Touring Car Stock.** SoCal resident and Brian Kinwald's trusted mechanic Steve Weiss had his Trinity-powered Losi Triple-XS on rails during qualifying, so he earned the choice spot on the starting grid for all three Mains. Alex Lopez earned the right to park his Schumacher Mission right behind Weiss's car, while Ron Atomic's XRay took the third spot on the grid. Weiss made clean starts in the first two Mains, and that was all he needed to secure back-to-back wins and the national championship. Weiss took the honorary DNS in the third Main to let the rest sort out who would take second- and third-place honors. Lopez finished second behind Weiss in the second Main, and he lapped the field and won the third Main to secure second place overall. Atomic's third-place finish in the first Main and second-place finish in the third one clinched the third-place overall title for him.



That's Touring Car Stock winner Steve Weiss (center), Alex Lopez (second place, with the weird beard) and Ron Atomic (again!) showing off their hardware.

■ **Spec 2-Door Touring Car.** Ron Atomic's XRay returned to mix things up, but with a little more horsepower strapped to the



Jade Kurtchi (center) won the Touring Car Spec class, with Brian Westerman (left) and Ron Atomic (right) in tow.

motor mount. Atomic must have figured out the fastest way around the track because his name appeared above all the other contestants on the final qualifying order. Colorado residents Brian Westerman and Jade Kurtchi qualified in second and third, respectively, and with equally fast lap times, they were definitely in the show.

Westerman crossed the line first to win the first A-main, while Scotty Ernst (from Milwaukee, WI) came out of nowhere to pick up the win in the second Main. At this point, the championship was up for grabs. The third Main turned into a hack-fest, but seventh-place qualifier Corey McCartney somehow kept it all together and won. Atomic, Westerman and Kurtchi finished in a three-way tie for the championship, so their "throw-out" rounds determined their final positions. The points stacked up in favor of Kurtchi, so he's the new Spec 2-Door Touring Car Champ. Westerman took second, and Atomic wrapped up third.

■ **Touring Car Modified.** Team Associated/Reedy factory driver Barry Baker was clearly the fastest driver at the Nats, and he set the tone during qualifying. His TC3 stuck to corners and actually howled as it flew down the straightaway. Team Associated/Reedy driver Mark Pavidis and Team Trinity/Team Losi driver Brian Kinwald were also in the groove, but that didn't stop Baker from taking the TQ.

Baker made winning the ROAR National

NEW CLASS IN THE MAKING?

To stir things up, a new Spec 2-Door Touring Car Exhibition class was added to the weekend. The contestants were given handout Trinity Chameleon 19-turn modified motors and were required to run control tires just as drivers in the rest of the touring-car classes were. Additionally, instead of the usual 4-door designs, 2-door body shells were required. It was nice to see a field of 2-door coupes on the starting grid instead of the usual bowl of "Stratus soup." The most popular body shell by far was the Protoform Honda Civic Si.

The winner wasn't given an official national championship title, but the contestants liked the 19-turn Spec class because the cars were faster and more exciting to race—and to watch—than equally equipped cars with competition stock motors. The 19-turn Modified class is also more affordable than the traditional Mod class because contestants don't need the best batteries with the highest run time and voltage numbers to remain competitive. We hope that ROAR will offer a 19-turn class for touring cars in the future.

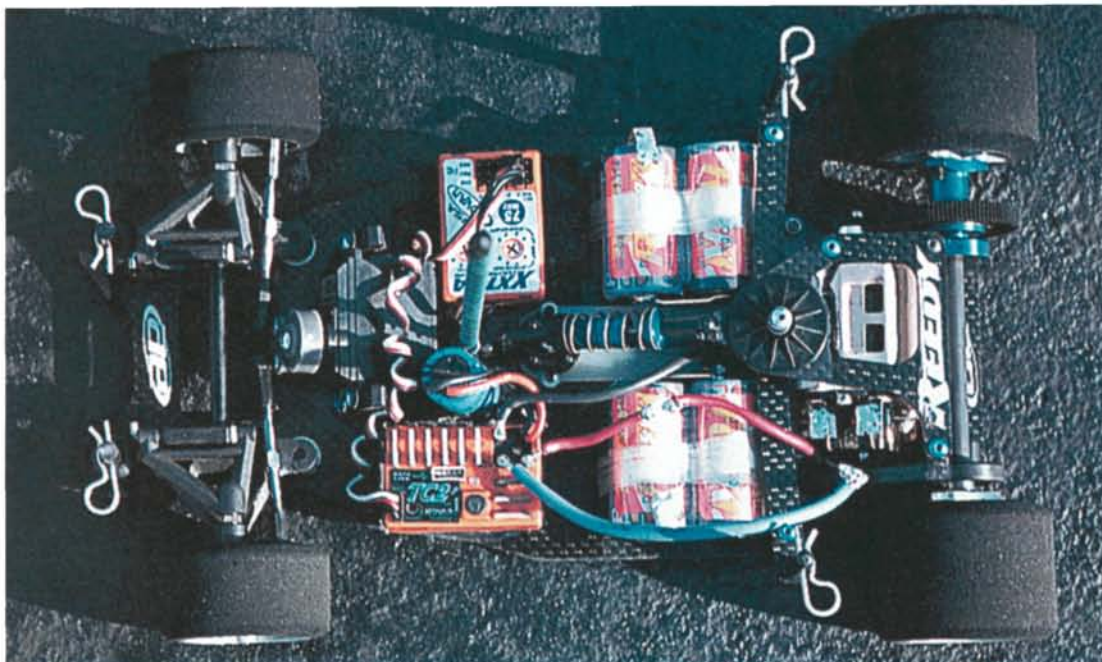
KEEP IN SPEC

Handout spec tires have become the norm at sanctioned events, and this one was no exception. All touring-class contestants were given a set of Sorex 36R slick tires and molded inserts, and they were allowed to buy an additional set to use during the three qualifying rounds.

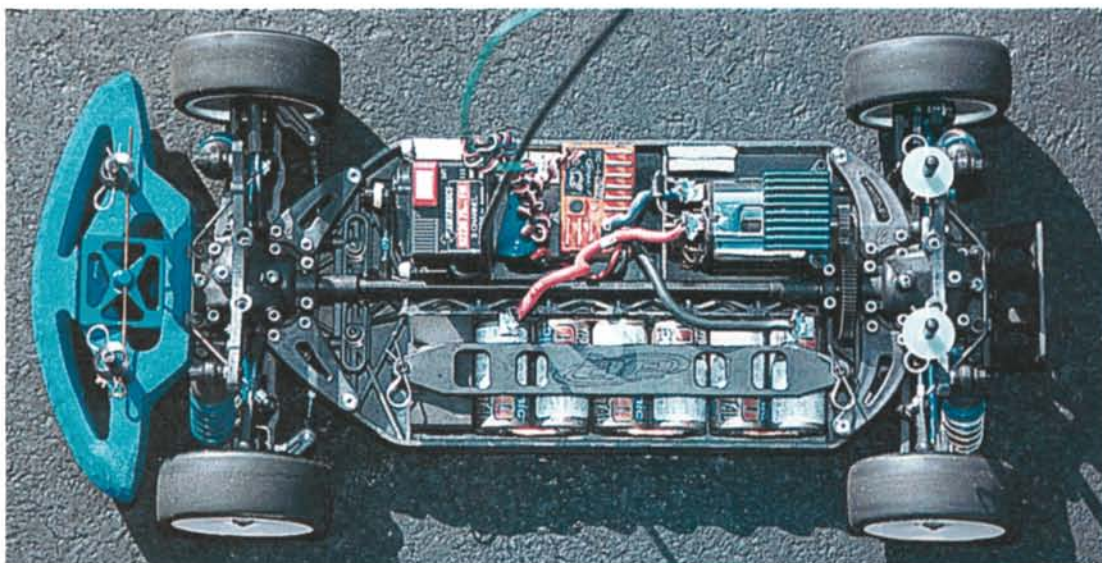
A-main drivers were allowed to buy up to two additional sets of tires and inserts to use during the triple A-mains, and the B-main and lower drivers were allowed one additional set of tires, since they faced only one decisive Main.

The Sorex tire/insert combo proved to be well suited to the high-bite outdoor track; I didn't hear a single complaint about traction all weekend, and some of the less than perfectly tuned touring cars traction-rolled in the corners and nearly flew off the track!

A 10-turn motor limit was strictly enforced in Touring Car Modified, but drivers had their choice of motor brand and number of windings. The contestants in the Touring Car Stock class were given handout Trinity P2k 27-turn stock motors, while the 1/2-scale 4-cell Stock contestants were allowed to use any ROAR-legal 27-turn stock motor and any foam tire compound they wanted. After the Mains, all of the winning motors in each class were torn down to the armatures and inspected to verify that they had not been tampered with and were still legal.



Scotty Ernst's TQ and ROAR National Championship-winning Team Associated 12L3. This thing is bone stock! Reedy NiMH cells and a Novak C2 ESC power the handout Trinity P2k stock motor. Jaco tires (purple in the front and green in the rear) and a Protoform Nissan P35 body gave him the traction and downforce he needed to stay in front.



Jade Kurtchi's national spec champ Factory Team TC3. The World Class Panasonic cells are installed in the aft position to give more rear traction, and the transponder is on the front bumper in case of a photo finish.



LRP's Juergen Lautenbach (right) came all the way from Germany to assist his team drivers at the Nats. Mike Reedy did the same, but he only had to travel through a couple of states to get there.



Team Trinity/Team Losi driver Matt Francis didn't have the greatest weekend. He ended up in the B-main but managed to have fun all the same. Matt is always glad to share setup tips with the locals.



You already know these guys. All time greats (and Mod class champs) Brian Kinwald, Barry Baker and Mark Pavidis strike a familiar pose.

Championship look easy. He went out in front and never gave up his position, and that earned him back-to-back wins during the Mains. Kinwald's second place in the first Main and his win in the third gave him the points he needed to secure second place overall. Pavidis finished third in the first Main and second in the final Main—good enough to claim third overall.

WRAP-UP

The staff members at MOHR Raceway went out of their way to set up a world-class track and to ensure that all of the contestants were comfort-



able and had a good time. They also did a fantastic job managing the event and maintaining the track; their efforts were appreciated by all those who competed. Congratulations to Barry Baker, Steve Weiss and Scotty Ernst—the 2002 ROAR National champions. ■

TOURING CAR STOCK

FIN	QUAL	DRIVER	CHASSIS	MOTOR	BATTERY	ESC	RADIO	BODY	TIRES
1	1	Steve Weiss	Team Losi Triple-XS	Trinity Handout	Trinity	Novak	Airtronics	HPI Stratus	Sorex Handout
2	2	Alex Lopez	Schumacher Mission	Trinity Handout	Kinetix	Keyence	Airtronics	Pro-Line Stratus	Sorex Handout
3	3	Ron Atomic	XRay Evo 2	Trinity Handout	Kinetix	LRP	Airtronics	Protoform Stratus 2	Sorex Handout
4	8	Chris Marsh	Team Losi Triple-XS	Trinity Handout	Fantom	LRP	Airtronics	Team Losi Alfa	Sorex Handout
5	7	Dustin Evans	Team Losi Triple-XS	Trinity Handout	Team Orion	Novak	JR	Protoform	Sorex Handout
6	5	Timmy Heiser	Schumacher Mission	Trinity Handout	Reedy	Novak	KO	Protoform Stratus	Sorex Handout
7	6	Scotty Ernst	Associated TC3	Trinity Handout	Reedy	Novak	Airtronics	Protoform Stratus	Sorex Handout
8	0	Eric Sanchez	Team Losi Triple-XS	Trinity Handout	Stevos	LRP	Airtronics	Trinity Stratus	Sorex Handout
9	9	Corey McCartney	Associated TC3	Trinity Handout	World Class	Novak	JR	Protoform Stratus	Sorex Handout
0	4	Michael Bruce	Corally C4.1	Trinity Handout	SMC	Keyence	Airtronics	Protoform Stratus 2	Sorex Handout

TOURING CAR SPEC

FIN	QUAL	DRIVER	CHASSIS	MOTOR	BATTERY	ESC	RADIO	BODY	TIRES
1	3	Jade Kurtchi	Associated TC3	Trinity Handout	World Class	Novak	Airtronics	Protoform Civic	Sorex Handout
2	2	Brian Westerman	Team Losi Triple-XS	Trinity Handout	World Class	Novak	Airtronics	Protoform Civic	Sorex Handout
3	1	Ron Atomic	XRay Evo 2	Trinity Handout	World Class	Novak	Airtronics	INS	Sorex Handout
4	4	Scotty Ernst	Associated TC3	Trinity Handout	Reedy	Novak	Airtronics	Protoform Opel	Sorex Handout
5	9	Michael Bruce	Corally C4.1	Trinity Handout	SMC	Keyence	Airtronics	Protoform Civic	Sorex Handout
6	7	Corey McCartney	Associated TC3	Trinity Handout	World Class	Novak	JR	Protoform M3	Sorex Handout
7	0	Joel Bandera	Corally C4.1	Trinity Handout	Corally	INS	Airtronics	Protoform Civic	Sorex Handout
8	6	Brian Lutz	Associated TC3	Trinity Handout	Pro-Match	LRP	Airtronics	Protoform Civic	Sorex Handout
9	5	Rob Michael	Corally C4.1	Trinity Handout	Corally	LRP	Airtronics	Protoform Civic	Sorex Handout
0	8	Rafael Amgulo	Associated TC3	Trinity Handout	Warpspeed	Keyence	Airtronics	Protoform Civic	Sorex Handout

TOURING CAR MOD

FIN	QUAL	DRIVER	CHASSIS	MOTOR	BATTERY	ESC	RADIO	BODY	TIRES
1	1	Barry Baker	Associated TC3	Reedy	Reedy	LRP	Airtronics	Protoform Stratus 2	Sorex Handout
2	3	Brian Kinwald	Team Losi Triple-XS	Trinity	Trinity	Novak	Airtronics	Losi	Sorex Handout
3	2	Mark Pavidis	Associated TC3	Reedy	Reedy	LRP	Airtronics	Protoform Stratus	Sorex Handout
4	4	Paul Lemieux	Team Losi Triple-XS	Trinity	Trinity	LRP	INS	Losi Alfa	Sorex Handout
5	6	Travis Amezcua	Associated TC3	Reedy	Reedy	LRP	Airtronics	Protoform Stratus 2	Sorex Handout
6	0	Greg Hodapp	Team Losi Triple-XS	Peak	Peak	Novak	Airtronics	INS	Sorex Handout
7	7	Todd Hodge	Team Losi Triple-XS	Trinity	Trinity	Novak	Airtronics	INS	Sorex Handout
8	5	Billy Easton	Associated TC3	Reedy	Reedy	LRP	Airtronics	Protoform Stratus 2	Sorex Handout
9	8	Mike Blackstock	Associated TC3	Reedy	Reedy	Novak	KO	INS	Sorex Handout
0	9	Chris Tosolini	Yokomo MR4 TC	Fantom	SMC	LRP	Airtronics	INS	Sorex Handout

1/2-SCALE 4-CELL STOCK

FIN	QUAL	DRIVER	CHASSIS	MOTOR	BATTERY	ESC	RADIO	BODY	TIRES
1	1	Scotty Ernst	Associated 12L3	Trinity Handout	Reedy	Novak	Airtronics	Protoform P35	Jaco
2	2	Michael Bruce	Corally SP2M	Trinity Handout	Corally	GM	Airtronics	Protoform P35	Corally
3	3	Randy Joslin	Associated 12L3	Trinity Handout	Stevos	Novak	JR	INS	INS
4	7	Vincent Ringler	Associated 12L3	Trinity Handout	Stevos	Novak	Airtronics	Protoform	INS
5	5	Billy Bowerman	Trinity Switchblade	Trinity Handout	SMC	LRP	KO Propo	Protoform P35	INS
6	6	Greg Yongue	Carpet Knife	Trinity Handout	Pro-Match	GM	Futaba	Protoform P35	INS
7	8	Dan Mayer	Trinity Switchblade	Trinity Handout	World Class	Tekin	Airtronics	Protoform	INS
8	9	Leon McIntosh	Associated 12L3	Trinity Handout	Reedy	LRP	Airtronics	INS	INS
9	0	Rod Bustos	INS	Trinity Handout	INS	Novak	INS	Protoform	INS
0	4	Chad Brockman	Associated 12L3	Trinity Handout	Stevos	Novak	Airtronics	Protoform P35	INS

INS Information not supplied by driver

HPI Micro RS4 Tuning Guide

Where, what and when to adjust your Micro

by Gary Katzer

HPI's micro RS4 is ready for fast fun straight from the box, but if you plan to race your Micro, there's much you can do to dial it in for track time. We've jammed hours of track testing into an easy-to-follow tuning article. From ball diffs to one-ways, we cover it all. Clear off some room on your workbench because it's time to start wrenching!

TIRES

HPI, Trinity, Team Orion, Megatech, Dynamite, GPM and others all offer tires in various compounds and tread designs; a good thing because tire selection represents 75 percent of the dialing-in process. In most cases, you should team softer-compound tires with the stock, hard-compound tires. This is especially true if you have a 140mm Micro with an abundance of steering.



> SOFT REARS, HARD FRONTS

This combination will eliminate oversteer and will allow the car to carry more speed through the corners. If you race with a mod motor and 6 cells, for adequate traction you may need to install softer tires all around. In most cases, it's best to run a slightly harder tire in the front than in the rear.

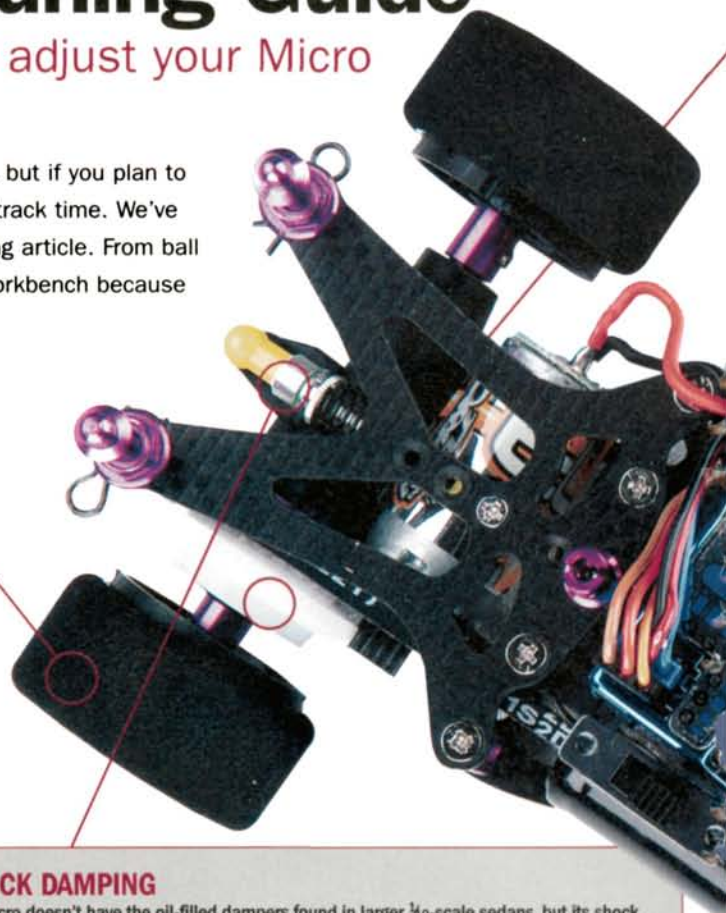
> TIRES FOR CARPET

HPI's 4719 high-performance wide tires are specially designed for carpet. Teaming these rear tires with the stock hard front tires is the ticket for racing on Ozite. Depending on how your car turns, you may or may not want to "sauce" the front tires with traction compound. Experiment by applying traction compound only to the front tires' inside halves or outside halves.

WHEELBASE & WIDTH

The Micro can be set up with a 140mm or 150mm wheelbase. The 150mm setup is usually more stable, and that makes it ideal for high-speed tracks with wide, sweeping turns. The shorter 140mm setting is not as stable, but it offers more aggressive steering; this makes it ideal for tighter, more technical tracks.

Front and rear width or "track" will also affect the way a car handles. As a rule, a wide track with a short wheelbase (a "square" footprint) has more steering and less rear bite; a more rectangular footprint (narrow track with a long wheelbase) has more rear bite and less steering.



SHOCK DAMPING

The Micro doesn't have the oil-filled dampers found in larger 1/10-scale sedans, but its shock damping can still be tuned by altering the thickness of the grease used to lubricate the shock shafts.

> THICKER GREASE (more damping)

If your car tends to have too much steering or it spins out easily, apply a thick lube to the front shock shafts. Tamiya Anti-Wear Grease and Associated Black Grease work well.

> THINNER GREASE (less damping)

If the car pushes or doesn't transition as quickly as you like, lighter damping can help; just apply thinner grease.

> REAR SHOCK TIPS

The same principles apply to the rear shock: if you want to increase steering by taking away rear traction use a thicker lube on the rear shock; if you need more rear bite, use a thinner lube. A little lube on the shock shafts is all it takes.



PHOTOS BY PETE HALL

REAR DIFFERENTIAL

The Micro's rear gear diff does a decent job, but a ball differential will operate more smoothly and can be adjusted for looser or firmer action (never set the diff so loosely that it slips). HPI, Dynamite, Megatech and others offer ball diffs that work very well.

> LOOSER SETTING

A loose setting increases rear traction when cornering, but it may also cause the diff to "unload" more easily on high-traction surfaces that cause the car to unweight its inside tires in tight turns.

> TIGHTER SETTING

When you use tighter diff settings, the car will have less rear traction when cornering because more force will be required to activate the diff. If traction isn't sufficient to activate the diff while cornering, the inside wheel will have less traction as the diff tries to turn it as quickly as the outside rear wheel.



FRONT DIFFERENTIAL

The Micro's front gear can be tuned by installing a stiffer or softer spring between the brass planetary gears. HPI's tuned spring set includes soft and firm diff springs.

> SOFTER SPRING

Installing a softer spring allows the front diff to rotate more freely and will enhance steering.

> STIFFER SPRING

A stiffer spring will slow diff action and reduce front steering.

> FRONT ONE-WAY

If you really want to free up your drive train and improve your car's high-speed steering, try installing a front one-way diff. The front one-way provides full power to all four wheels during acceleration, but allows the front wheels to freewheel during coasting and braking. A one-way also gives a car more high-speed steering, but it will have rear-wheel braking only. If your transmitter has endpoint adjustments, use that feature to adjust the brake throw so full brake power falls just short of locking the rear tires. When using a one-way, HPI suggests an upgrade to steel or aluminum universal axes, as a one-way setup puts a greater strain on the axes.



SHOCK SPRINGS

HPI, Team Orion, Megatech, GPM and several other RC sources offer color-coded tuning spring sets for the Micro. Orion's spring set includes red springs (stiffer than the stock, black springs), and blue springs (softer than stock). HPI's set includes "medium firm" green springs and "firm" blue springs, both of which are stiffer than the stock HPI black springs.

> STIFFER SPRINGS

Stiffer springs usually require more damping to prevent the suspension from rebounding harshly. Stiffer springs also reduce grip; use them for higher-bite conditions.

> SOFTER SPRINGS

Softer springs require less damping; if you over-damp a soft spring, the suspension action will become slow and mushy. Soft springs yield more grip; use them when traction is low.



SOURCE GUIDE

ASSOCIATED ELECTRICS (714) 850-9342; RC10.com.

DYNAMITE; distributed by Horizon Hobby (877) 504-0233; horizonhobby.com.

GPM; distributed by Hobby Etc. (603) 595-8549; hobbyetc.com.

HPI (949) 753-1099; hpiracing.com.

MEGATECH (201) 662-8500; megatech.com.

TAMIYA (949) 362-2240; tamiyausa.com.

TEAM ORION (714) 694-2812; team-orion.com.

TRINITY (732) 635-1600; teamtrinity.com.

Matched Packs Explained!

Why big-dollar batteries are worth the bucks by Lito Reyes



You might be able to run a "regular" pack and hang with these guys for the first couple of laps, but to stay on race-pace for a full five-minute qualifier, you're going to need a matched pack!

You've seen them at the hobby shop stacked in neat rows behind glass. They aren't dumped into a box behind the counter with all the lowly stick packs; they're special and displayed to attract your attention. Ah, yes; matched battery packs—the truly dedicated electric racer's status symbol. But they cost 30 to 50 percent more than the same cells (minus the little paper labels) in an assembled stick pack! To uninformed racers, the premium placed on having matched cells might not seem worth the expense, but informed racers know why the packs are so much more expensive; the numbers on the labels really mean something. If you're ready to step up to the next level of electric-power expertise (or you're just dying to know what makes matched packs so special), keep reading.



What makes matched cells special?

Matched cells cost so much more than the same cells assembled into a stick pack because it takes time and trouble to figure out what each cell is capable of producing. Even though the cells in a stick pack and those with individual

labels in a little box might come from the same manufacturing batch, their journeys to store shelves are different.

When the cells are delivered to the company, they are "matched"—a process by which they are charged and discharged ("cycled") to measure their performance parameters (more on that later). The cells that have the best numbers are grouped as "Team" or "Pro" packs (depending on what the matching company chooses to call them); the cells that aren't quite as good go into "race" or "sport" packs; and the cells with the lowest range of performance values go into stick packs for play duty.

Testing and matching cells takes a long time, and this simplified description of the matching process doesn't take into account the voltage-enhancing, or "zapping," procedures that might be part of a matcher's regimen. This extra production time accounts for much of a matched pack's added cost, but for what you're really paying for is performance; after all, if the best "Team" cells cost the same as "Sport" cells, why would anyone ever buy the Sport cells?

Above: the GP3300 cells used in the stick pack (left) have the same internal construction and components as Trinity's best VIS-Extra GP3300 Team cells (right). The difference is in performance; only the cells that have the lowest internal resistance, highest voltage and longest run time make it into matched packs.

What does it all mean?

When a matching company runs a cell through the cycling machine, it obtains data pertaining to the cell's characteristics—a report card, so to speak. The cell is graded in a number of different areas, all of which help to determine how that cell will perform in a car. Even though most industry matchers use a Lavco or a Turbomatcher matching unit, they choose the data to publish on their cells; consequently, some of the parameters shown here (for example, the peak voltage "PV" value seen on this Fantom cell) might not be shown on every company's cells—but these are the biggies:

RUN TIME, IN SECONDS

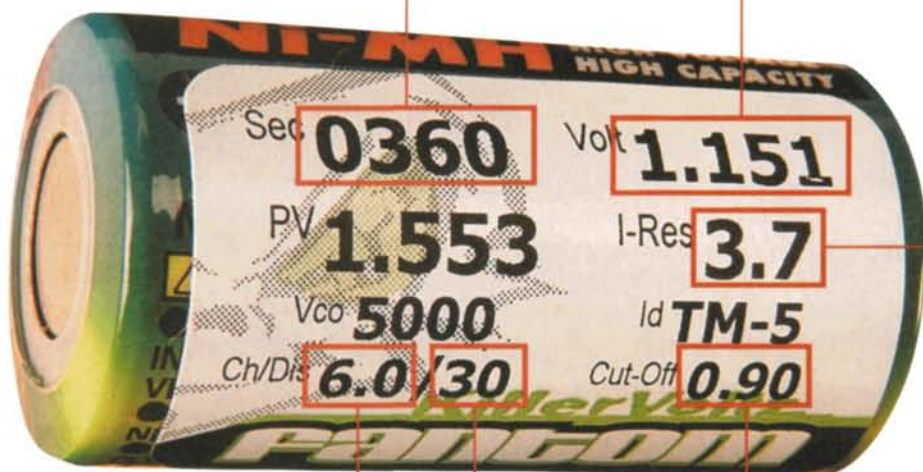
This number tells us how long it took a cell to reach the cutoff voltage at a specified discharge amperage. Divide this number by 60 to figure out about how many minutes the pack will last under race conditions. But remember that this number depends on another variable—the discharge rate; so be careful when you compare this number on different cells. A lower discharge rate, say 20 amps, will produce a higher run-time number than if the cell had been tested at 30 amps. Compare only the run times of packs that have the same discharge rate.

AVERAGE VOLTAGE

This indicates a cell's average voltage from the start of the discharge process to when it reaches the cut-off voltage. If a cell has a higher average voltage throughout its discharge cycle, it will produce higher motor speeds; a few tenths of a volt in a pack can mean winning that dash to the finish line. Many feel that the average-voltage number is more important than the run time because in many race classes—especially off-road—today's large battery capacities have almost eliminated any concerns about run time.

INTERNAL RESISTANCE

This may be indicated in milliohms or as a calculated number that serves as a relative measurement. Either way, the number indicates a cell's internal electrical resistance; lower is better. Internal resistance determines how "punchy" a pack feels; this is especially important in high-bite, off-road racing and with 4WD sedans. Because it is usually calculated using several variables, it is nearly impossible to compare these values for cells matched by different companies.



CHARGE RATE IN AMPERES (AMPS)

This tells us the amp rate at which the cell was charged for testing. The charge rate given on a matched pack's label is probably also the best rate at which to charge it to keep the cells performing consistently.

DISCHARGE RATE IN AMPS

This is the discharge rate at which the cell was matched. Use this number as a general indicator of the type of racing it is appropriate for. If the cell is rated at 30 amps, it should be fine to use with any modified motor. A 25A rating should be OK for most modifieds with conservative gearing; and 20A cells are good for the stock class, since a stock motor typically doesn't put more than an average load of 20 amps on a battery, but you should hesitate to stress this cell with a really hot modified. You wouldn't hurt it, but it's difficult to say how well it would perform at 30 amps if you only have information generated during a 20A matching process.

CUTOFF VOLTAGE

This is the voltage at which the matching device stopped discharging the cell. It's an accepted practice to measure a cell's performance using a 0.9V discharge-cutoff voltage, but be aware that some matchers use a cutoff voltage of 0.85 volt, and that can make the numbers—particularly run time and average voltage—look more attractive. When you compare two packs, make certain that they have the same cutoff voltage and discharge amp rate.

The best batteries in the world won't help you if you tag every corner or crash because you're nervous when another car challenges your position.

Do you really need a matched pack? If you still have trouble getting through a qualifier without being marshaled every other lap, you're better off buying more practice time instead of better batteries.

If you are ready to move up to matched packs, keep these points in mind:

> DON'T GET TOO HUNG UP ON THE DIFFERENCES BETWEEN NUMBERS GIVEN BY DIFFERENT MATCHERS. Comparing such numbers is misleading because manufacturers might use different matching machines, rating criteria, or discharge rates; their labels might not include comparable information. Certain matchers might group cells according to run time; others might record and group

Before you buy

according to internal resistance and average voltage; there are other combinations.

> BUY CELLS THAT MATCH YOUR NEEDS. For example, since the motors used in off-road stock racing are so close in performance, buying cells with a high average voltage is pretty important so that you'll be able to squeeze more rpm out of your stocker than the next guy. If you drive in a demanding modified class such as on-road or dirt oval, run time is the most important factor. If your favorite class is modified sedan, you need a combination of low internal resistance and long run time.

Matched batteries are a big investment, so don't go into the hobby shop without first knowing what you need. But now you do know—right? ■

LRP Pulsar Competition

World-champion charger

by Jason Sams

The Pulsar Competition is LRP's first charger to be released in America, but it has already proven itself as the choice of world champions; Surikarn Chaidajsuriya and Matt Francis had Pulsars on their benches when they won their respective IFMAR ISTC and 2WD Off-road World Championships. In addition

to being a fully adjustable, professional-caliber charger, the Pulsar can also discharge packs and be used to power motors for break-in or to operate other DC equipment. Most interestingly, LRP claims the Pulsar actually provides a superior charge that extends run time and punch with each charge. Does it deliver? I tested all the Pulsar's functions to find out.

LIKES

- Trick Indiglo-style backlight.
- Fully adjustable to suit all types of RC battery packs.
- Intuitive menu system is very easy to use.
- Charge amperage can be changed while charging is in progress.
- Useful discharging and motor break-in functions.

DISLIKES

- No AC/DC version.



FEATURES

PUSHBUTTON OPERATION. The Pulsar is programmed and operated by four buttons. The menu key scrolls through the unit's various functions; the "increase" and "decrease" keys adjust the value of the selected function, and a start/stop key (stay with me here) starts and stops whichever function you've selected.

BACKLIT LCD DISPLAY. Cryptic displays are a thing of the past. The Pulsar's two-line, 16-character LCD display spells out the unit's various functions and their values clearly and wins style points with its vivid Indiglo-type backlight.

LINEAR, FLEX AND TRICKLE-CHARGING MODES. The Pulsar's linear mode charges at a steady rate, at up to 8 amps; the amp rate is user-adjustable in 0.1A increments. Linear charging is preferable for NiMH cells and can also be used for Ni-Cds. LRP also recommends using the linear mode for new packs. The Pulsar's Flex-charging mode interrupts the charge current with short bursts of discharging. This process helps "wake up" batteries that have many cycles on them or packs that suffer from "memory" problems. Flex charging is useful for Ni-Cds, but it isn't recommended for NiMH packs. The Pulsar's trickle mode is activated after charging is completed and can be set to 0.1 to 0.4 amp, or deactivated (NiMH cells don't like to be trickled). While charging, the Pulsar displays charge mode in use, charge time, amp rate, input voltage, output voltage and pack capacity. When charging is complete, the final values for capacity, charge time and pack voltage are displayed.

ON-THE-FLY AMP-RATE ADJUSTMENT. Unlike other programmable chargers, the Pulsar's charge rate can be adjusted without interrupting or restarting the charge cycle. This feature is especially handy when your race is coming up and you need to speed up the charging process, or if you realize mid-charge that you've set the amp rate higher or lower than you'd like.

INTERNAL COOLING FAN. The Pulsar's internal cooling fan is programmed to come on only when necessary.

The fan quietly cools the unit on hot days and when the charger is under a significant load.

10A DISCHARGER. The Pulsar discharges packs at a fixed rate of 10 amps and automatically stops discharging when the pack's voltage reaches 3.6 to 6 volts (0.6 to 1 volt per cell). The cutoff voltage is user-set in 0.1V increments. After discharging is complete, the battery's capacity, discharge time and average voltage are displayed.

MOTOR RUN-IN. The "run-in" mode can be used to power a motor during break-in, power a comm lathe, or even operate a DC soldering iron. The run-in mode's voltage can be adjusted from 2 to 7.2 volts in 0.1V increments.

MATCHING. The matching mode does not actually "match" batteries in the conventional sense of comparing the performance of individual cells; instead, the Pulsar's matching mode performs a discharge/charge/discharge cycle using the user-set charge and discharge amperages and then displays the pack's average discharge voltage and capacity in milliamps and seconds. This useful feature helps you better understand how a pack will perform throughout a race and makes it easy to monitor a pack's performance over its life.

AUTOSTART TIMER. For maximum performance, it's best to have your pack reach its peak charge just before you grid the car. The Autostart timer helps you do this by allowing you to set the Pulsar to begin charging anywhere from 1 to 99 minutes after you press the start key. Go ahead and grab lunch; the Pulsar will start charging for you even if you're late getting back to the pits.

AUTO RESTART SYSTEM. It happens all the time; while you're away from the pits, someone accidentally shuts off your power supply or disconnects the charger, or the shop's circuit breaker pops. When power is restored, there's no way to know just how long your pack was actually charging or what its charge status was. The Pulsar has you covered with its auto-restart function; if

the Pulsar loses power, it will automatically begin charging without resetting any data once power has been restored (it also sounds an alarm to let you know the power is out). If the Pulsar is unpowered for more than three minutes, the charger displays the duration of the power failure and resumes charging.

ADJUSTABLE DELTA PEAK. A battery pack's voltage climbs during charging but then drops when the maximum charge is reached. Peak chargers "look for" this change in voltage (known as the "delta" value; delta is the Greek symbol for change) and stop charging when they detect a voltage drop. This method works, but a pack's voltage can fluctuate during a charge and fool the charger into "thinking" that the pack has peaked before it is fully charged. One solution to false-peaking is to have the charger look for a deeper voltage drop to signify a peak charge, but this can lead to overcharging, particularly with NiMH packs. The Pulsar's adjustable delta peak value can be set from 5 to 80 millivolts in 5mV increments, so you can tailor the charger to your packs. To help you determine which setting to use, LRP includes a "cheat sheet" with suggested settings for all types of popular Ni-Cd and NiMH cells, including receiver batteries and micro-car packs. In addition to the delta value, suggestions for charge mode, charge current and trickle current are provided.

PEAK CAPACITY SYSTEM (PCS-2). The Pulsar doesn't rely on its adjustable delta peak feature alone to prevent false peaking and overcharging. According to LRP, the Peak Capacity System uses advanced algorithms and a "digital filter" to prevent normal fluctuations in the pack's voltage from being interpreted as a peak charge.

OVERLOAD AND REVERSE-POLARITY PROTECTION. The Pulsar's software protects it against overload and improper installation of the input and output leads, and it will indicate faults on the Pulsar's LCD screen. If the screen goes dark, it means that the internal fuse has blown (and you're a hack). A spare fuse is included, but you'll have to open the Pulsar's case to install it.

TESTING

The weather was scorching during testing, but the Pulsar's internal fan prevented it from overheating. I followed LRP's suggested charge settings for the various 2000, 2400 and 3000mAh packs I used, and I experienced reliable charging with no false peaking. No surprise there, since the Pulsar is a high-end charger and should, at the very least, reliably deliver a fully charged pack. I was more interested in LRP's claims that the Pulsar would increase a pack's punch and run time compared with the same pack's performance when peaked by other brands of chargers. To test this claim, I charged and dumped a selection of test packs using the Pulsar and my usual charger, both set to charge at 6 amps. I drove the packs back to back in my Team Losi Triple-XS, and the Pulsar-charged packs did feel a little punchier. Run time also increased slightly for some packs to the tune of about 10 seconds. That doesn't sound like much, but that's an extra lap on some tracks. Though the Pulsar did seem to give a little boost to all the packs I charged, not all saw extended run times; your results will vary with the types of packs you use and their condition.

PULSAR

Dimensions	100x153x70mm
Weight	600g
Input voltage	11 to 15
Charging modes	Linear and Flex
Charging capability	1 to 8 cells
Charge current	0.1 to 8 amps
Trickle current	0.0 to 0.4 amp
Delta peak	5 to 80mV
Autostart timer	0 to 99 min.
Discharge current	10 amps
Discharge cutoff voltage	3.6 to 6 volts
Motor run in	2 to 7.2 volts
Multi-protection system	3-way
LCD display	Blue backlight, 2x16
Cooling fan	Yes

Pulsar Proponents

Current IFMAR World Champion Surikarn Chaidajsuriya and former World Champ Atsushi Hara both use LRP Pulsar chargers, but not because LRP offered them sponsorship deals; all they got was an invitation to try the Pulsar.

In Atsushi's case, he had no trouble going fast at the Touring Car Masters in Eppelheim, Germany, but he was



falling flat on run time. This led to a visit from the LRP crew, who suggested that he try using the Pulsar instead of his usual charger. Much to his surprise, his battery performance improved. Oh, yeah; he won the race, too.

"I used the

Pulsar Competition in the Masters race and found it gave excellent punch and run time. I think it has the best performance of all the chargers," said Hara.

Surikarn got his chance to try a Pulsar at the On-Road Worlds in South Africa, and after he won the event, he was a convert. In his thank-you letter to LRP (nice guy!), he said, "The Pulsar Competition provides more power, but it consumes less time than other chargers. I prefer to use the Pulsar Competition instead of my old chargers."

Matt Francis also figures into this story, since he used a Pulsar to charge his Trinity packs on the way to his IFMAR 2WD Off-Road World Championship victory, but Matt was already a fully sponsored LRP driver at the time. Matt raves about his Pulsar, but he didn't write LRP a thank-you note. That inconsiderate bum!



Most chargers simply return to their main menu screen or indicate a completed charge if the charger loses power; the Pulsar is smarter than that. It lets you know if it lost power because of a disconnection or an outage.



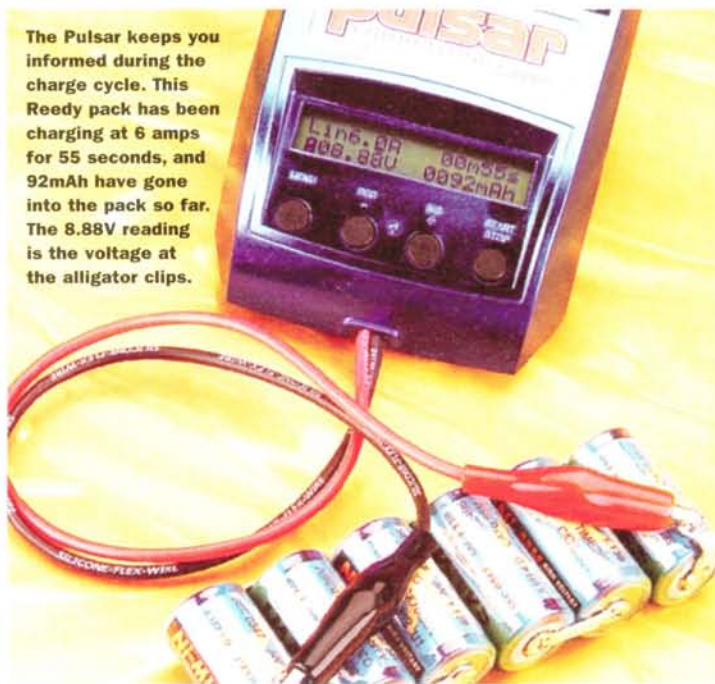
When I raced with the Pulsar, I used its motor run-in feature to power a comm lathe and break in motors after reassembly. I set the voltage to 4.8 volts to simulate the 4-cell pack I usually use, and the Pulsar did its thing. In addition to eliminating the need to carry a 4-cell pack in my pit box, using the run-in mode makes it easy to switch the motor or lathe on and off by hitting the start/stop key. One thing to keep in mind: if the motor draws more amperage than your power supply is rated to supply, the run-in mode will not work. If this happens to you, try using a gel-cell battery or a 12-cell pack to power the Pulsar (or pony up for a stronger power supply).

I also tested the discharger, which performs well and barely heats the Pulsar, thanks to the internal cooling fan. I also used the discharger as part of the Pulsar's matching function, and it performed as promised. If you use a notebook or your computer to store the data generated by the matching function, you'll be able to track your packs' performance all season.

THE VERDICT

LRP definitely has an excellent product in the Pulsar Competition Charger. Scrolling through the menu is effortless, and changing the settings is simple. The blue case and indigo-type blue backlit screen are totally cool; the LRP guys obviously know a thing or two about the "bling-bling" factor. The Pulsar is relatively small and can be stored in a convenient spot, such as the top shelf of a large toolbox, but you'll need to bring along a power supply, since the Pulsar is DC only. All in all, it's a great value for anyone in the market for a workhorse charger.

The Pulsar keeps you informed during the charge cycle. This Reedy pack has been charging at 6 amps for 55 seconds, and 92mAh have gone into the pack so far. The 8.88V reading is the voltage at the alligator clips.



SOURCE GUIDE

LRP ELECTRONIC Distributed by Team Associated (714) 850-9342; teamassociated.com.

Project Tamiya Terra Crusher

Although I was tempted to whittle a few aluminum parts for my plus-size Tamiya Terra Crusher (TC) as soon as the big rig became available, I sat tight to see what the aftermarket would cook up. The wait was worth it; New Era, Golden Horizons, Megatech and Tamiya (of course) now offer a bunch of dress-up and durability-enhancing parts that I put to good use in Project Terra Crusher. Penguin R/C helped out, too, with a bit of custom graphite goodness (you'll see). Big-block power is the finishing touch—and vital, considering all the hefty aluminum parts I bolted on!

Parts list

GOLDEN HORIZONS

- Bulkhead bracket—item no. GH02703B; \$19.99
- Aluminum C hub set—GH02708S; \$39.99
- Knuckle arms—GH02707B; \$49.99
- Bulkhead support—GH02709S; \$14.99

NEW ERA

- Silver super duty bulkhead (F/R)—TEC330-31; \$85
- Bumpers and supports (F/R)—TEC322Z/TEC323Z; \$39.95 each
- Forward-only conversion—TEC348; \$29.95
- .21 conversion kit—TEC110; \$139.95
- Aluminum gearbox support clamp—TEC360; \$18.95
- Lower braces—TEC326; \$59.50
- Center skidplate—TEC334; \$14.95

FUTABA

- 9250 digital servo—S9250; \$106.99
- 9450 digital servo—S9450; \$121.99

TAMIYA

- Aluminum hex hubs—53496; \$15.99
- Shocks TXT-1 Super-low-friction damper set—53492; \$44

TRINITY

- Terra Crusher spring set—TK5131; \$11.99
- Monster Horsepower 20% nitro fuel—MH020M; \$29.99
- 650mAh AAA receiver pack—RC5308; \$29.99

RPM

- Associated GT receiver box (blue)—70055; \$9.95

OMEGA

- .21 sport buggy pull-start engine—OMAP200; \$179.99

MEGATECH

- Titanium kingpin set—MTC24801; \$22.50
- Aluminum steering with bellcranks—23814, \$48
- Body-post set—23829, \$67
- Carbon brake disc—24813, \$20

PHOTOS BY WALTER SIDAS AND PETE HALL





Performance

I almost didn't want to drive my Terra Crusher after I had built it; it looks too good to run through dirt, but you have to do what you have to do. After breaking in the engine, I tweaked the carb needles for maximum performance. The Omega .21 engine really brought the Terra Crusher to life!

The smaller tires increased the final gear ratio and caused the top speed to suffer slightly, but acceleration is unbelievable; this truck really rips. Just the slightest tap of the throttle, and the truck lights up the wheels and takes off, throwing dirt everywhere. First gear winds out very quickly, and once the truck hits second, it isn't long

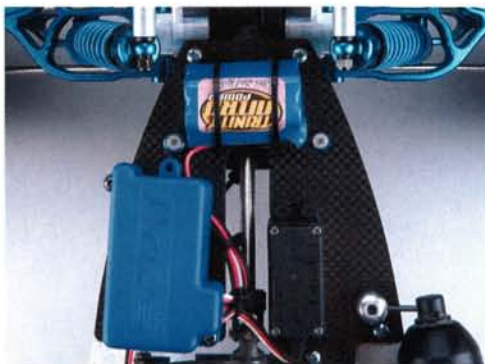
before it hits top speed. I should definitely gear up the tranny a bit; the chassis is slotted, and New Era offers a couple of gears, so that shouldn't be a problem.

The truck's revamped suspension soaks up the bumps very well, and jumping the Terra Crusher is a dream. The Trinity springs were a good addition; they don't have any trouble supporting the heavy .21 engine and the many aluminum hopups. Thanks to the Futaba servo and smaller tires, steering has been improved.

Despite the truck's considerable heft, it's actually very responsive and has a "light" feel at the wheel.

CHASSIS. I started with New Era's .21 conversion kit, which includes a new, 3.2mm aluminum chassis plate (thicker than stock). The chassis has the same stock wheelbase and will accommodate a big .21 engine without a problem (see the "Engine and accessories" section for more on what the .21 conversion kit includes).

I wanted to clean up my truck's looks a little, so I ditched the stock "shovel-head" radio box/forward chassis assembly in favor of a single graphite plate that I designed using CAD. I sent the design as a computer file to the guys at Penguin R/C, and they cut the part out of 3mm graphite. Looks good, eh?

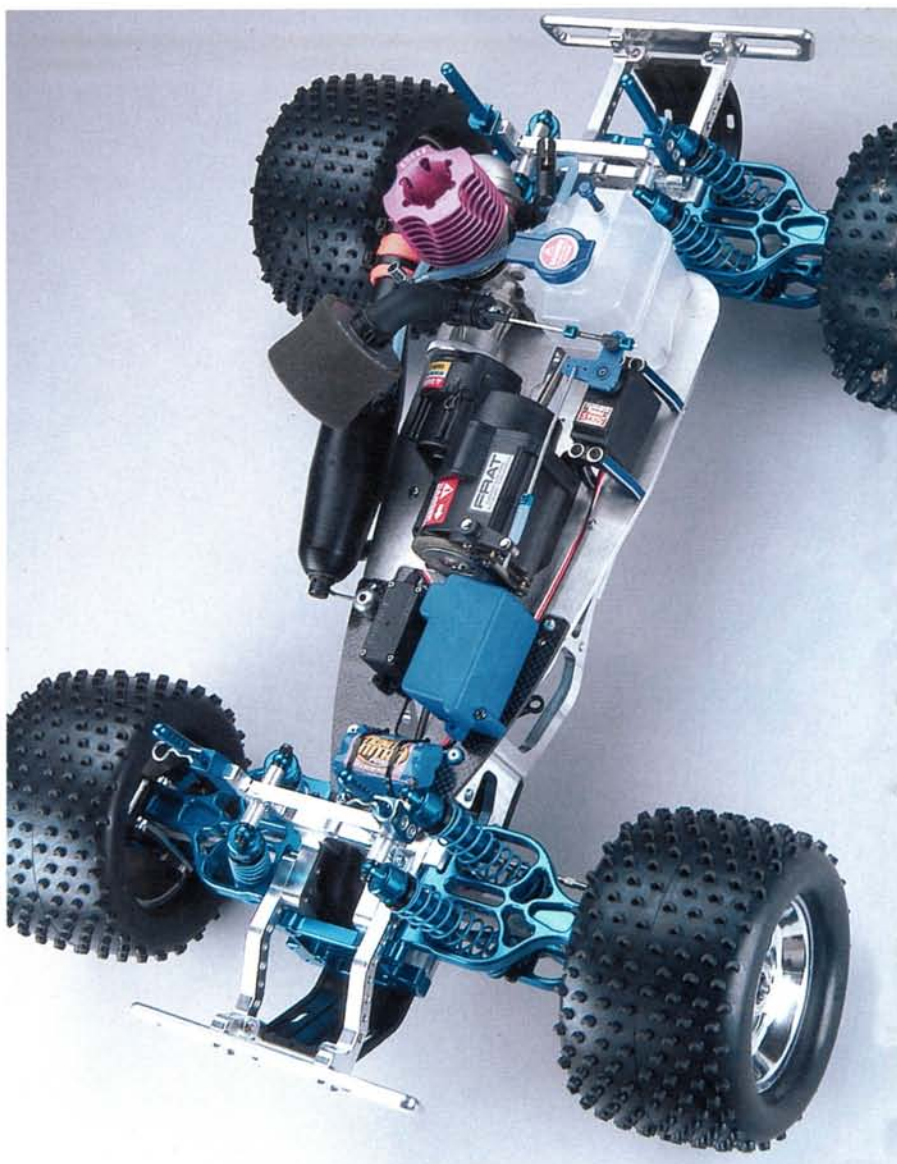


Here's a look at the custom radio plate. I sent a CAD file to Penguin R/C, and the folks there cut out the plate for me.

I positioned the throttle/brake servo so that it's next to the engine, and I replaced the stock, 1/4-scale steering servo with a high-torque servo of standard size that's installed in pretty much the same position as the stock servo.

The chassis is supported underneath by New Era's aluminum lower chassis braces. They are machined out of solid aluminum billet and include all the necessary mounting hardware. A super-duty, 3.2mm-thick, aluminum center skidplate from New Era protects the bottom of the transmission.

I enhanced the truck's looks with front and rear aluminum bumpers and supports from New Era.



I DITCHED THE STOCK SHOCKS FOR TAMIYA'S HIGH-QUALITY ALUMINUM UNITS. THEY'RE MACHINED TO THE TIGHTEST TOLERANCES AND HAVE A SILKY SMOOTH ACTION.



SUSPENSION. New Era's super-strong aluminum bulkheads grace the front and rear. Machined out of solid aluminum billet, these three-piece units consist of left and right bulkheads and a shock tower (this offers seven shock-mounting positions for each shock). Golden Horizons blue-anodized aluminum bulk-head braces join the left and right bulkheads.

I replaced the stock plastic suspension arms with a Golden Horizons blue-anodized aluminum set that is beautifully machined and super strong. Aluminum hub carriers, also from Golden Horizons, join the upper and lower arms; the axles are housed in Golden Horizons machined-aluminum hubs. I ditched the stock shocks for Tamiya's high-quality aluminum units. They're machined to the tightest tolerances and have a silky smooth action. I used a set of extra-stiff blue Trinity springs to support the chassis' considerable weight.

New Era's aluminum shock tower with its many shock-mounting holes allows me to fine-tune the suspension. I replaced the stock suspension arms with a set from Golden Horizons; they are functional and look great. A classy-looking bumper from New Era protects the suspension and chassis from impacts.

ENGINE AND ACCESSORIES. New Era's .21 conversion kit includes a new chassis plate, engine mounts, a new clutch nut, a flywheel, a linkage assembly and a forward bearing for the clutch bell. I bolted the parts to an Omega pull-start .21 that features a heavy-duty starter, an ABC piston and sleeve, a 2-needle composite slide carb and an SG crank—a full race setup.

ELECTRONICS. There's nothing wrong with the servos and radio gear included with the Terra Crusher, but I wanted lighter, faster servos and a radio with more tuning options. I replaced the radio with a JR XR3 system. This allows me to fine-tune my truck for racing more effectively than the stock radio did. Instead of the stock throttle/brake servo, I chose the Futaba 9250 unit. With a transit speed of 0.11 second and 76.3 oz.-in. of torque, it's faster and more powerful than the servo the truck came with. Tamiya's standard 1/4-scale steering servo does a more than fine job of steering the Terra Crusher, but I wanted to shed some weight and speed up the steering response, so I replaced the big servo with a Futaba 9450 that offers 111 oz.-in. of torque and a transit speed of 0.10 second.

A Trinity 5-cell receiver pack powers the receiver and servos. I secured it to the chassis using a couple of zip-ties.

DRIVE TRAIN. I rarely use reverse when I run my Terra Crusher, so I installed a forward-only conversion kit from New Era. It's just a simple piece of machined steel and a plastic spacer that replaces the forward clutch in the gearbox. A .21 engine puts out a lot of torque that can cause the rear diff housing halves to separate. When that happens, the gear mesh changes and the gears end up being stripped. To prevent this from happening, I installed an aluminum support clamp from New Era for the rear diff; it fits around the diff housing's outside diameter and holds the housing's halves together.

One thing about the Crusher drives me nuts: the plastic hex stays in the rim, and the drive pin falls out when you remove the rims and tires. I solved this problem with a set of aluminum drive hexes from Tamiya. They're clamped onto the axle and will never come off.

The heart of my Terra Crusher—an Omega .21 pull-start engine. This high-quality piece was easy to tune and ran very well.



TRC off-road tires give the Terra Crusher tons of forward traction. They are factory-mounted on these nice-looking, chromed wheels.

BODY, WHEELS AND TIRES. I used the Terra Crusher's stock body, but I chose a clear version so I'd be able to paint my own design. I used Parma FasKolor paints, which I sprayed on with a Tamiya airbrush. I decided to use TRC off-road T-Maxx tires and chose the Paqman tread (the C-shaped lugs are good for the track as well as the backyard). The tires are factory-mounted on TRC's chrome-plated 6-spoke wheels.



I eliminated reverse gear by adding New Era's forward conversion kit. The hard-ened steel hex replaces the forward clutches on the top shaft.

TRICK TRUCK STUFF



MSJ PRECISION PRODUCTS Heavy-duty starter shaft kit for the Thunder Tiger EK4

MSJ's oversize starter shaft is machined out of solid steel that has been heat treated to increase its hardness and, therefore, its durability and positive one-way bearing engagement. A custom-machined aluminum backplate is included; its larger shaft opening fits the large starter shaft. The opening is sealed by an O-ring to prevent air from entering, and an Oillite bushing keeps the shaft spinning smoothly. Item no. EN-30-001R; \$42.95.

TALK TRUCK!

Send your "4x4" questions and comments to Kevin Hetmanski, kevinh@airage.com.

SOURCE GUIDE

FUTABA distributed by Hobbico/Great Planes Model Distributors Co. (800) 637-7660; futaba-rc.com.
GOLDEN HORIZONS ENTERPRISES CO. LTD. (604) 331-2526; ghhobby.com.
GREAT PLANES MODEL DISTRIBUTORS (800) 637-7660; greatplanes.com.
HORIZON HOBBY INC. (800) 338-4639; horizonhobby.com.
JR RACING distributed by Horizon Hobby (217) 355-9511; horizonhobby.com.
MEGATECH INTL. (201) 662-8500; megatech.com.
MSJ PRECISION PRODUCTS (480) 632-5337; msjproducts.com.
NEW ERA MODELS (603) 888-4453; neweramodels.com.
OMEGA (engines) distributed by Horizon Hobby (800) 338-4639; horizonhobby.com.
PARMA/PSE (440) 237-8650; parmapse.com.
TEAM ASSOCIATED (714) 850-9342; teamassociated.com; rc10.com.
TRC (732) 635-1600; teamtrinity.com.
TRINITY PRODUCTS INC. (732) 635-1600; teamtrinity.com.

Glow plugs explained

Glow-plug manufacturers produce a large variety of plugs—all with their own promise of great performance. They all have the same basic design, but with so many brands, a variety of “heat ranges” and ultra-hip-sounding “turbo” plugs on the shelves, it’s difficult for average RC guys to know where to begin. Ever wonder what the difference between a spark plug and a glow plug is, or what makes a glow plug’s design so vital to an engine’s performance? Here are your answers.

GLow PLUGS VERSUS SPARK PLUGS

Both glow plugs and spark plugs ignite the air/fuel mixture inside the engine. Glow plugs look similar to auto spark plugs—and both types cause the fuel to go “boom”—but that’s where the similarities between them end. Spark plugs (as their name implies) produce electrical sparks when connected to an electrical power source. Engine compression and combustion have no effect on producing sparks from spark plugs, and if the electrical source is disconnected, spark plugs quit sparking, and the engine quits running. Two-stroke model engines with glow plugs, however, operate under different conditions.

As its name implies, when a glow plug is connected to a 1.5V external power source (a glow igniter), its coiled element glows hot because of electrical resistance. When a 2-stroke engine’s cycle has begun, compression and combustion keep the plug’s coil glowing hot, even after the 1.5V power source has been removed. Unlike spark plugs, glow plugs will operate without an external electrical power source and will continue to glow throughout an engine’s combustion cycle.

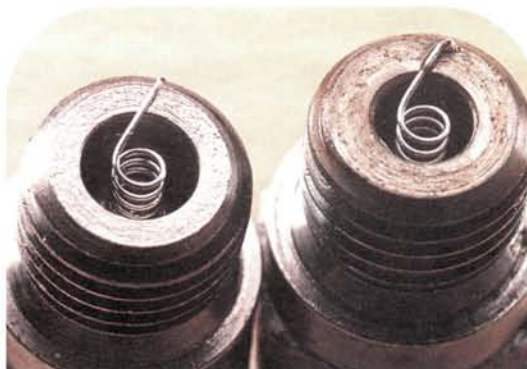
UNDERSTANDING HEAT RANGE

It’s important to realize that there is no universal glow-plug heat-range standard; one manufacturer’s “cold” plug may be hotter than another manufacturer’s “medium” plug.

Plugs rated as “cold” could have cooler coils than “hot” plugs, and a coil’s temperature affects how an engine will run.



Even a mini spark plug is massive compared with a typical RC nitro car engine glow plug. The ways in which the plugs operate are just as different. The big spark plug relies on an electrical charge from an ignition system to create a spark for combustion; the smaller glow plug relies on the heat of combustion to stay “glowing” because during operation, it doesn’t have a power source connected to it.



The “hot” no. 59 McCoy plug (left) and the “cold” no. 9 (right) are almost identical; the difference in temperature range comes from the size of the hole in which the element is installed. Notice that the hotter plug (left) has a considerably larger opening.



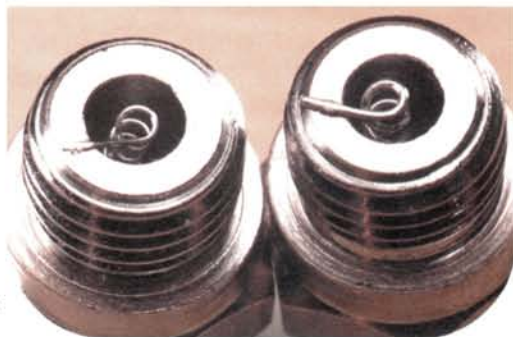
Several factors determine a glow plug’s temperature range; these include but are not limited to:

- The composition of the coil wire.
- The coil wire’s diameter.
- The total length of the wire used to form the coil.
- The size of the plug opening in which the coil is installed.
- The plating and material used to make the glow-plug’s body.

A glow-plug housing’s plating can noticeably affect its temperature range. The black housing coating (left) makes a plug “cooler” than the reflective “gold” and “chrome” plug housings (right).

Here’s how the factors contribute to glow-plug performance:

- **Coil wire.** Thicker, shorter coil wire (fewer coils) makes a colder plug; thinner, longer wire (more coils) makes a hotter plug.
- **Opening size.** The size of the opening that houses the element also affects a plug’s heat range. A larger opening exposes more of the coil to the air/fuel that enters the combustion chamber, and that promotes combustion and contributes to the plug’s being “hotter.” A smaller opening around the coil makes the glow plug “colder.”
- **Glow-plug housing.** The type of plating used here affects a plug’s temperature range. Housings with chrome and shiny, gold-color plating reflect heat and contribute to a plug’s being hotter. Dull, black coatings are not as reflective and make for a colder plug.



The no. 3 Enya plug on the left is rated as “hot,” and the no. 6 Enya plug on the right is “cold.” Notice that they’re almost identical, but the wire that forms the element in no. 6 (right) is much thicker. In this case, the element is what makes the difference in temperature range.

"READING" A PLUG

The pro's monitor how well their engines are running by "reading" their glow plugs; after they've run their vehicles, they examine the glow-plug's coil.

If an engine has been tuned properly and is running well, the coil will be shiny or a light gray, and its shape will be uniform even after a hard run. The leaner you tune your engine, the grayer and more deformed the coil will be, and these signs warn that you're running your engine too lean! If that's the case, replace the glow plug, richen the fuel mixture immediately, and retune your engine for good performance.

Before you unthread a glow plug, you must clean the area around it. When the engine has cooled, spray a generous shot of nitro cleaning spray around the glow plug to rid the opening of dirt and debris. If you don't do this, you risk having this dirt fall into your engine as you remove the glow plug.



PLUG 1. TOO LEAN

This plug came from an engine that was tuned to run too lean. The housing is slightly oil-stained, but the coil is clearly compressed into the housing, so we know it got too hot and was nearly melted by combustion heat. If the engine had continued to run in this condition, the element would have melted and come out of the plug. At that point, you'd be lucky if it just fell out through the exhaust port; it would usually cause some type of internal engine damage.

PLUG 2. NORMAL

Here's what a reasonably fresh plug from a well-tuned engine should look like. The housing is relatively clean, so it hasn't seen too much hard duty, and the coil is shiny and hasn't been deformed by excessive combustion temperatures or hydraulic locking caused by being run with too much fuel.

PLUG 3. TOO RICH

This was taken from an engine that had been tuned with an excessively rich fuel mixture. The deposits on the plug housing and the coil were formed because the plug couldn't burn off all the excess fuel; this would eventually make the engine difficult to start and to tune.

PLUG 4. OLD AND WORN

This plug is closer to ideal, but it's old and may fail soon. The lubricants in the fuel and the temperatures generated during combustion lead to glow-plug-housing discoloration. Notice that on the first few coils, the element is relatively clean and a white-ish color. This indicates an optimum to slightly lean fuel mixture. An engine with this plug makes good power, but it might be too lean if there's a slight change in the weather (ambient temperature).

MANUFACTURERS' SPECS:

GLOW-PLUG HEAT-RANGES

Our information on glow-plug temperature ratings comes from their manufacturers. There is no established standard to "rate" glow-plug "temperature," so there's no way to accurately compare plugs from different product lines. A "hot" plug from one manufacturer will not be the same as one that's rated "hot" by another manufacturer. Rossi plugs, for example are rated from "cold" to "very cold," but Trinity tells us that Rossi's "very cold" R5 is similar in temperature range to McCoy's "hot" no. 59 or an O.S. A3, and the rest of the Rossi plugs get progressively colder. Why no direct comparisons? Well, there's the absence of a consistent rating standard, and there are elements of glow-plug construction whose effects can't be measured (this makes independent comparisons even more difficult). Nevertheless, when it's time to replace a plug and you're at your local hobby shop, manufacturer information will help to point you in the right general direction.



DuraTrax

Silver Sport—hot
Carbon Speed—medium hot
Gold Racing—cold

Enya

No. 3—hot
No. 4—medium hot
No. 5—medium cold
No. 6—cold

McCoy

MC55*—hot, low nitro
MC59—hot, low to medium nitro
MC8—medium
MC9—cold
MC50 (medium w/idle bar)
MC4C (4-stroke plug)
*Not recommended for car use

O.S.

A3—hot
8—medium hot
A5—medium cold
R5—cold
Type F (4-stroke plug)—very hot
Type RE—for rotary engines

O.S. Turbo

T-P6—hot
T-P7—medium
T-P8—cold

Traxxas

3231—medium
3230—hot

Trinity/Picco

P-3S—hot
P-6S—medium
P-7S—cold

Trinity/Rossi

R5—extra cold
R6—cold
R7—cold
R8—very cold

Trinity/Sirio

S6 Turbo—medium
S7 Turbo—cold

SOURCE GUIDE

DURATRAX Great Planes Model Distributors (800) 682-8948; duratrax.com.

ENYA MRC (732) 225-2100; fax (732) 225-0091; modelrectifier.com.

McCoy McCoy Racing (909) 982-3888.

O.S. ENGINES Great Planes Model Distributors (800) 637-7660; greatplanes.com.

TRAXXAS CORP. (888) 872-9972; traxxas.com.

ROSSI Trinity Products Inc. (732) 635-1600; teamtrinity.com.

NOVAMEGA Serpent Inc. USA (305) 639-9665; info@serpent-usa.com; serpent.com.

NEW FOR NITRO

O.S. 12CV-R & 15CV-R Turbo Heads

O.S.'s newest pair of engines are turbo-plug versions of its popular .12 and .15 CV-R racing engines. They feature durable ABC construction, SG-style crankshafts, slide carburetors and performance-boosting turbo-plug cooling heads. You can expect these new turbo-plug CV-Rs to provide slight increases in overall horsepower and rpm.

O.S.; distributed by Great Planes Model Distributors Co. (800) 682-8948; osengines.com.



CRC RACING STS .12 racing engines



Imported by CRC Racing, according to the company's Frank Calandra, these new engines are very powerful. The ROAR-legal, blue-head 3-port STS MT-12 features ABC construction, a threaded crankshaft and a slide carb, and it uses standard glow plugs. The STS-RS12 is a ROAR-legal factory-modified 3-port with a gunmetal gray head (not shown). For the Outlaw crowd, a purple-head .12 with 5 ports and an ABC piston and sleeve is available. According to CRC, pull-start versions of these STS engines and big-block .21 engines are also in the works.

CRC Racing (315) 338-0867; teamcrc.com.



Glow-plug variants

Plugs with an "idle bar." An idle bar runs across the glow-plug opening, and you'll see these plugs on hobby-shop shelves. Will they work in your application? Properly adjusted engines don't need a plug with an idle bar, and plug manufacturers say they aren't made for engines smaller than .21 (3.5cc). The bar is intended to protect the coil from being extinguished by an overly rich fuel mixture. This type of plug was originally designed to run in larger engines than we typically use. Such plugs may fit in your engine, but the idle bar may cause contact between the glow plug and piston or may increase compression and cause detonation.

"Turbo" plugs. These do the same job as regular plugs—they ignite the fuel/air mixture inside the engine—but their design offers an advantage. A turbo plug is tapered and doesn't need a washer; it seals the combustion chamber nearly perfectly.



This Fox glow plug features an idle bar, and it's one of the only plugs to have a machined housing; you get the benefit of the idle bar without having to lengthen the housing or risk the bar's contacting the piston. Plugs with idle bars aren't recommended for the smaller engines we typically use in our RC cars. They are generally too "cold," and they might touch the piston.



Regular, non-tapered plugs with copper washers can allow leakage out of the engine's combustion chamber, and this causes a slight loss of performance.

The taper on a turbo plug and on the mating portion of the head also allows the combustion chamber to be smoother and less likely to disrupt the fuel/air mixture during combustion. It doesn't matter how long or short the plug is, and there isn't any concern with the thickness or reusability of glow-plug gaskets.

Turbo plugs are sealed against the interior surface of the cylinder head; the tapered part mates with a taper in the cylinder head's glow-plug opening (or "head button" on two-piece heads). This fit means that the

Q I'm frustrated because the O.S. 12TR in my Nitro TC3 is difficult to start, and when it does start, it takes forever on the starter box to fire it up. My glow plug is fresh, and I know the glow igniter is charged and ready to go. I've even seen fuel spray coming out of the carburetor opening because it takes so long for the engine to start it almost floods.

A Luckily, I think there's an easy answer, and it lies with your starter box.

Associated's Nitro TC3 has a unique rear-facing engine orientation that most starter boxes are not designed for. You are probably trying to start the engine backwards! Unless you've set your starter box up to crank the engine in a counterclockwise direction (looked at from the rear of the NTC3), it is cranking the engine backwards, and your starting difficulties will continue until you reverse the starter-box wires to spin the engine in the right direction. An engine can start when spun backwards, but as you've found out, such starting is rare, and it takes quite a long time. If you see fuel spraying out of the carb, this is a sure sign that your engine is spinning in the wrong direction (engines are like air pumps; they always suck air and fuel in through the carburetor and pump it out through the exhaust—unless they're spinning backwards). Reverse the starter-motor leads on your old starter box, or think about buying a new box. Check out Associated's new Nitro TC3 starter box (item no. 1750) and OFNA's new Multibox, which has built-in NTC3 alignment openings. As long as your equipment works properly and your engine is well tuned, you'll be amazed at how easily the engine starts when the starter is spinning in the proper direction.



It's important to have a starter box that's designed and set up for your car; if you don't, you might find yourself struggling to start your engine. Team Associated's starter box is ideal for its Nitro TC3 because the starter-wheel's rearward mounting position matches the rear-facing engine. Notice the extra mounting holes for the starter wheel; they allow you to use the starter box in other applications.

CONTACT THE PISTON POWER SOURCE

Send your Piston Power questions and comments to Stephen Bess stephenb@airage.com

Left: this standard plug has a copper gasket that seals it to the engine's cylinder head. The plug's depth is more critical here; it may protrude into the combustion chamber. **Right:** this turbo plug doesn't use a gasket. Its tapered bottom matches a tapered hole in the cylinder head to create a strong seal without a gasket.

glow plug is always installed at the proper height; the interior contour of the combustion chamber is never disrupted by a plug that is too long or too short, and there isn't a gasket to worry about leaking. The result is a potential top-end performance increase of a few thousand rpm.

Are turbo plugs less durable than regular plugs, and are they suitable only for on-road engines? These are popular misconceptions. Having a tapered body does not make a plug less durable. Plug durability is determined more by its coil construction and how the engine is tuned than by a plug's housing. To seal properly, turbo plugs do, however, require perfectly clean plug and head-button threads.

Off-road engines encounter more dirt and grime than on-road engines, so turbo plugs are more suitable for on-road applications. If, however, you maintain a clean, debris-free head button and glow-plug threads, a turbo plug will work just fine. ■

Wet Paint!

New stuff for 2003

Happy New Gear! Skip the silly hats, the champagne and those twirly things that make that annoying ratchet sound; it's time to ring in 2003 "Body Shop"-style. With so many new paints, detailing items and bodies to tell you about, the only way to do it right is to dedicate this month's column to describing all the new stuff. If this is any indication of what lies ahead in the new year, it will definitely be a happy one. While you're checking out all of the cool stuff, I'll try to figure out where the past 12 months went.



PRO-LINE RACING Dodge Power Wagon

With the introduction of Pro-Line's Dodge Power Wagon, Maxx truck enthusiasts have another classic truck to choose from. The vintage Mopar is molded in .060 Lexan for added durability and includes full-color decals, window masks and overspray film. So who's going to be the first to make a "M.A.S.H." Maxx out of one of these? By the way, the Power Wagon is wearing Pro-Line's new "Big Joe 40" series tires and new Maxx bumper.

Dodge Power Wagon—3138-00; \$28.

Big Joe tires—1103-01; \$33.

Maxx bumpers—6018-00; \$14.



ARTOOL PRODUCTS CO. Hobby Mask

Artool has debuted its new Hobby Mask—a thin, flexible masking material that's ideal for RC body painting. Hobby Mask makes fast work of masking large areas and tackling intricate graphics. The solvent-proof clear film stretches well and conforms easily to odd contours and corners, thereby allowing you to easily duplicate graphics drawn on the exterior of the body. Hobby Mask's medium-tack adhesive keeps it in place yet won't lift layers of paint or leave any sticky residue. The 6-inch by 10-yard roll will last you through many bodies.

Hobby Mask—HM-1; \$19.95.



SCHUMACHER USA Hot Works Scale Wheels

If you think these Hot Works wheels look good here, wait until you see them mounted on a chassis. They're designed for most popular 1/10 touring cars with standard 12mm hex hubs. Scale enthusiasts will like the designs because they're very similar to those available for many full-size cars.

Various part numbers depending on wheel choice; \$12.99/pack of 4.

PARMA PSE FasKolor Specialty Shades

Parma showed off some neat new additions to its water-based FasKolor lineup. FasFlips are prismatic colors that change hue depending on the angle at which they're viewed. FasGlow is glow-in-the-dark paint that will really spice up those nighttime parking-lot races; it glows with bright white/green luminescence. FasGlow can also be mixed with one part FasFluorescent color to five parts FasGlow to alter the hue. FasTint is a semi-transparent smoke color that works well for painting windows and shadowing graphics.

FasFlip Maple—40020, Jade—40021, Scarabaeus—40022, Sapphire—40023; \$10.99 each.

FasGlow—40190; \$4.29.

FasTint—40191; \$4.29.



PARMA PSE FasKolor F-1 Airbrush

Parma set up a large painting area where its staff conducted hourly masking, painting and finishing demonstrations. I spotted the company's new FasKolor F-1 airbrush at the painting table and couldn't wait to try it, so I jumped in to give a few demos as a guest painter. The F-1 is a professional-quality, dual-action, siphon-feed airbrush that handles fine lines and broad coverage with ease. The F-1 set includes a case, compressor adapter, air hose, FasKolor adapter cap and plastic paint jar.

F-1 airbrush—40260; \$109.99.



PRO-LINE RACING Mini Cooper

How can you not love the new Mini? Pro-Line's RC version accurately replicates the fine detail of the retro rocket and is available for both nitro and electric retro enthusiasts.

Mini Cooper—3139-00 (190mm), 3142-00 (200mm); \$23.



MDI RACING Paint Masks

Bored with basic stripes? Burned out on flames? MDI Racing comes to the rescue by providing new spark for your bodies with its elaborate vinyl paint masks that include headlamp masks, tribal designs, sheet metal and many other slick ways to create a hot-looking body.

Various part numbers, depending on graphic; \$4.99 to \$8.99.



FRESH PAINT

Gary Katzer, Milwaukee, WI

RC Car Action contributor Gary Katzer wanted to replicate the BAR color scheme for the Tamiya Corvette that he built for the TCS Nats. The small, associate sponsor decals aren't commercially available, so a simple solution was to download the images from the Internet, print them out and glue them to the inside of the body with XXX-Main picture glue. The result is permanent images that are inside the body and can't be scuffed off during racing. The "Lucky Strike" logos and background were completed with various shades of FasKolor.

Do you have a sharp, uncluttered photo of your best paintwork? Send it in! Explain the types of paint, products and techniques you used to finish it. Be sure to include your full name and address and your email address if you're online. For information about sending electronic images, check out www.caraction.com. Send prints or slides to "Body Shop," RC Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA.

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JACKAL Internal Paint Transfers

This tiger is obviously the airbrush work of some contest-winning artist, right? Actually, it's one of Jackal's internal paint transfers. The reverse-image graphics are a unique new way to add artistic impact to your body without years of painting experience. The transfers come on a protective carrier



sheet; to apply them, simply remove the protective overlay film to expose the image, and blot it into position inside your body with a moist cloth. The process is similar to that used to affix a temporary tattoo. When the image is in place, it is covered by paint layers, so you don't have to worry about the graphic delaminating or flaking away.

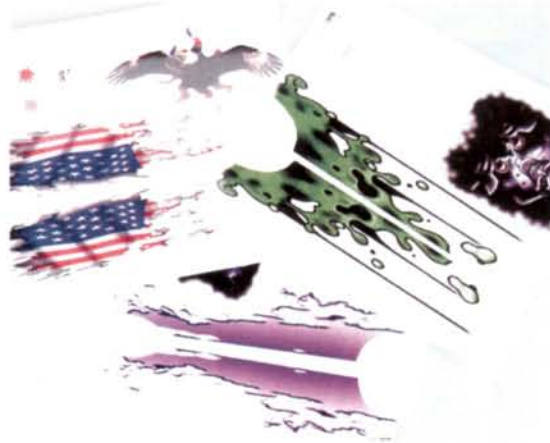
Part nos. and prices vary.

RACERS EDGE

SIC Designs Body Graphics

Dressing up an otherwise plain-looking RC body is a lot easier using the wide variety of unique graphics from SIC Designs. The 6x8-inch, self-adhesive decal sheets are designed for RC vehicles and include some of the freshest graphics on the market today.

Various part numbers depending on graphic; \$4.99.



BLACK GOLD

House of Kolor paints

In the full-size customizing world, House of Kolor is widely regarded as the premier source for custom paint. Now Black Gold offers House of Kolor candy, pearl, fluorescent and specialty paints in a size that's suited to RC bodies. Best of all, the paints are available in 5-ounce spray cans with adjustable-pattern nozzles and in 1-ounce jars for use with airbrushes.

Part nos. and prices vary with paint color.



CONTACT THE BODY SHOP

Send your "Body Shop" questions and comments to Bob Hastings, bobh@airage.com.

SOURCE GUIDE

ARTOOL PRODUCTS CO. (503) 253-7308;
artoolproducts.com.

BLACK GOLD (817) 633-1135; blackgoldweb.com.

JACKAL HOBBIES (775) 824-0171;
jackalhobbies.com.

PARMA PSE (440) 237-8650; parmapse.com.

PRO-LINE RACING (949) 849-9781;
prolineracing.com.

RACERS EDGE (801) 978-9501; racers-edge.com.

SCHUMACHER (813) 889-9691; racing-cars.com.

SIC DESIGNS distributed by Racers Edge.

Competition Electronics Turbo 35BL Stealth Edition

THOUGH THE BASIC TURBO 3X HAS BEEN AROUND FOR MANY YEARS, Competition Electronics has given its latest Turbo charger a facelift and modified the software to maximize functionality. The Turbo 35 BL Stealth Edition is designed to be the ultimate charger on the market, providing racers with as much information about their battery packs as it possibly can.

FEATURES

LINEAR AND TURBO-FLEX CHARGE MODES. The Turbo 35 features linear charging plus a "Turbo-Flex" mode. Turbo-Flex is negative pulse charging that, in simple terms, shocks Ni-Cd batteries to restore voltage and run time. In the Turbo 35, it can be set at various levels to help restore old, tired Ni-Cd batteries. Do not use the Turbo-Flex modes on NiMH packs. The Turbo 35 can cycle from 1- to 7-cell battery packs. There are presets for 1-, 4-, 6- and 7-cell packs, but manually adjusting peak levels and other parameters allows you to charge, cycle, or discharge any number of cells in between.

DELAYED RE-PEAKING. You can set the Turbo 35 to re-peak your pack after the initial peak at whatever amperage you like. The delay time before sensing voltage peak during the re-peak mode is also programmable; this avoids false peaking while topping off the charge.

THREE CHARGER PROFILES. For racers who use both Ni-Cd 2400s and NiMH 3000mAh packs, the Turbo 35

can store a profile for each one in one of three non-volatile memory locations. This saves setup time and makes the Turbo 35 even more user-friendly.

DISCHARGER. After a run, racers can dump their batteries on the Turbo 35 at up to 35 amps (25 amps for 7 cells). This eliminates having to drag out resistors, dump boxes, or light bulbs. Discharging on the Turbo 35 also provides consistent and accurate data concerning the remaining charge in the pack, which provides more usable info for racers.

DISCHARGE PROFILES. If you use some packs just for oval and some just for on-road racing, the Turbo 35 can "train" your cells to perform at their peak under these conditions. When a pack is being discharged, the Turbo 35 alters the amperage rate to simulate the racing condition of either an oval or an off- or on-road race. Of course, you can select the normal linear discharge mode as well.

CYCLING. The Turbo 35 can cycle individual cells or complete packs. Racers can select the charge and discharge rates, the number of cycles, whether the Turbo should re-peak the pack before discharging and the delay time between cycles.

INTERNAL-RESISTANCE (IR) READINGS. The lower the IR, the more punch a pack has. But how do you know what a pack's IR is without taking it apart and re-matching the cells? With the Turbo 35, both relative and actual internal-resistance numbers will be shown at the conclusion of a cycle for either a single cell or an entire pack (discharging a pack will not show individual results for cells within the pack, only overall figures of the pack as a whole).

INDUSTRY-STANDARD CYCLING INFORMATION.

The most commonly used professional battery-matching machine is the CE Turbo Matcher 4. Competition Electronics makes both the Turbo 35 and the Turbo Matcher 4, so they have the same features and discharge circuitry. This means that you get battery performance numbers that are comparable to that of the industry-standard matching machines used by some of the largest battery matchers.

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BACKLIT 2-LINE DISPLAY. Indoor tracks' pit areas don't always have the best lighting, and after dusk, it's often difficult to read a display outdoors. Not to worry, though; the Turbo 35 includes a brightly backlit screen. As long as the charger is plugged into an appropriate power source, you'll be able to see what's going on.

MOTOR-RUN MODE. The motor-run mode runs a motor at a user-selected voltage for however long you wish. So if you want to break in a motor for 5 minutes while you hit the track's snack bar, you're set. The real beauty of this feature is its reasonably high amperage limit, which also allows you to power your motor lathe and perform break-in duties.

PRINTER OUTPUT. A serial port on the left side of the Turbo 35 enables it to be connected to a

PC, thereby making available many options, starting with the use of the HyperTerminal software that's included with more current Windows operating systems and which is used to import battery data into spreadsheets or other programs. Competition Electronics also offers optional Turbo Label software that allows you to print battery labels so you can keep track of the condition of your cells for optimum performance.

DC ONLY. Many pro-caliber chargers are now AC/DC capable, but the Turbo 35 is a DC-only unit. For best results, use "clean" DC power from an RC-specific 12V power supply; stay away from automotive battery chargers.

TESTING

Once connected to a power supply, the Turbo runs through a short diagnostic check. It will take you a few minutes to browse through all the menus, but when you become familiar with the menu structure, you'll find the Turbo very easy to navigate. We set up a charge profile for NiMH batteries, another for 2400mAh packs and a third for Micro RS4 packs. Under each profile, the desired charge rates, trickle-charge parameters, the number of re-peaks and their charge rates, voltage thresholds of each peak, long lockout and Turbo-Flex modes can be stored.



We also set up discharge parameters for each profile. To enter the menu for discharge programming, press the "DIS-CHRG" button once. We used a 30A discharge rate with a 5.4V cutoff, with three total cycles for NiMH packs. We discharged 2400mAh Ni-Cds at 25 amps and also used a 5.4V cutoff. Each profile is programmed to cycle the packs three times once the cycle function has been initiated.

The profiles that use variable-rate discharge, such as oval or off-road, are useful, but these profiles do not generate actual internal-resistance numbers. The discharge-amperage rate constantly fluctuates, so it makes sense that the charger can't provide an actual IR number. You need to use the linear-discharge mode if you want actual IR figures for the cells or packs. In use, the Turbo 35 handled everything we threw at it, including back-to-back-to-back cycling without overheating or blowing a fuse.

THE VERDICT

There's a reason why many pro's use a Competition Electronics Turbo charger; CE makes one of the finest, most versatile chargers in the industry, and it's easy to use. Experienced racers will find the Turbo 35's ability to multitask very inviting. Each of its functions is useful and effective, and the overall versatility is hard to beat. ■

Competition Electronics (815) 874-8001; competitionelectronics.com.

RPM Wide Off-Road Front Bumpers

THE STOCK FRONT BUMPERS included with the Associated RC10GT and Team Losi Triple-X series cars and trucks are minimalist designs intended for racing; in the real world of bash-around play driving, a more substantial bumper is a much better match for the rocks, tree roots, sidewalks and all the other potentially parts-busting obstacles we encounter. RPM has long been the king of aftermarket bumpers, and



it recently added some stylish new models to the lineup. The new front-end protectors are molded of RPM's "guaranteed bulletproof" blend of nylons, and they easily replace the stock Associated and Losi bumpers with just a few minutes of wrenching. Each bumper is fully supported by four screws and spans 6 inches to provide ample suspension-arm protection. Molded-in rails on the bumpers' undersides provide extra reinforcement and help protect the mounting screws from being damaged. After installing and thrashing the Losi and Associated bumpers, we can say with confidence that RPM should not have to honor many claims on its "You break it, we replace it" toughness guarantee. We were able to scratch and scuff them, but even after drilling curbs head-on, the bumpers came back for more abuse.

Wide front bumper for Losi Triple-X series, black only—item no. 73602; \$8.95.

Wide front bumper for RC10GT—70332 (black), 70335 (blue); \$8.95.

RPM RC Products (909) 393-0366; rpmrcproducts.com.

Trinity Ride-Height Gauge

EVERYONE KNOWS HOW CRITICAL droop and ride height are to on-road chassis setup, so Trinity's new ride-height/droop-gauge combo tool should find a home in pit boxes everywhere. The machined aluminum, black-anodized tool is stepped on both ends; one side measures ride height (3 to 9mm, in 1mm increments), while the other end measures droop (0 to 8mm, in 1mm increments). To measure ride height, just slide the gauge under the car until the chassis sits on one of the numbered steps. To measure droop, hold the flat edge of the gauge against the bottom of the chassis and note which step the arm sits on (with the suspension fully extended, of course). The "droop" end of the tool can also be used to measure ride height on vehicles that have a ground clearance greater than the 9mm maximum of the tool's "ride-height" end; just use the droop gauge's steps to measure ride height and then add 7.5mm (that's the thickness of the tool) to the reading.



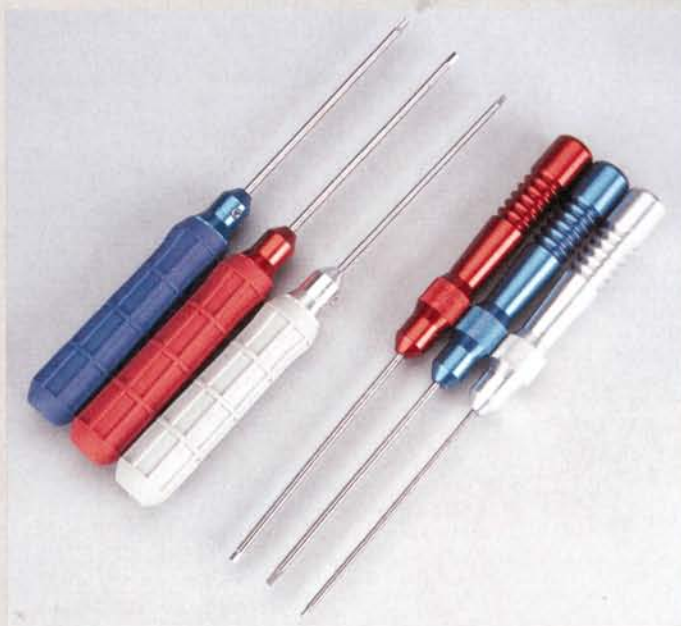
Racers Edge Metric Power Wrench Set

RACERS EDGE SELLS ITS POWER WRENCHES individually as well as in three-piece sets; the metric set is reviewed here, and it includes 1.5, 2 and 2.5mm tools. All use the same aluminum handle design, but each is anodized in a different color to indicate size; the red tool has a 2.5mm tip, blue is 2mm, and silver is 1.5mm. By the time you've finished your first job using your new Racers Edge wrenches, you'll have the color-coding memorized, but we still would like to see the tip sizes engraved into the handles for easier identification. In use, the tools performed very well; the tips fit precisely, the shafts are long (but not too long), and the knurled "spinner" at the handle's base is just the right size and shape for easy twirling. The 2.5mm wrench could be improved with a thicker handle, though; larger fasteners require more torque than the slender 16mm handle can easily provide. Racers Edge has a solution; it offers the Power Wrenches with "Power Grips"—ribbed rubber sleeves that thicken the handles and give the tools a grippier feel. For maximum torque, go with the Power Grip option.

Metric Power Wrench set—item no. RE7021; \$32.

Metric Power Wrench set with Power Grips—RE PRO7021; \$36.

Racers Edge (866) 855-5566; racers-edge.com.



There isn't much testing to do with a gauge like this, so rating the tool comes down to its quality and precision, and it scores highly in these areas. Crisply engraved numbers, deep black anodizing and nice finish work make the Trinity ride height/droop gauge a well-built, functional, valuable addition to your tuning arsenal.

Trinity ride height/droop gauge—item no. RC2083; \$25.

Trinity Products Inc. (732) 635-1600; teamtrinity.com.

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ALABAMA

Hobby Raceway, Tusculoosa, Alabama 35405; Mark or Don Holt, 205-759-4517/205-333-8679; email: jbogard@comcast.net; web: www.hobbyraceway.com

Mobile Miniature Speedway, Theodore, Alabama 36582; Richard Sweetser, 251-653-6643; email: jbogard@comcast.net; web: www.mobileminiaturespeedway.com

North Cullman Raceway, Cullman, Alabama 35055; Daniel Lollies, 256-775-2491; email: cullmanracing@yahoo.com; web: www.cullmanracing.com

Oak Mtn R/C Raceway, Columbiana, Alabama 35051; Matthew Gordon, (205) 669-6837; email: oakmtncraceway@hotmail.com

R/C Hi-Tech Raceway, Huntsville, Alabama 35811; Rick Chambers, 256-539-1347

Spring Cove International Speedway, Florence, Alabama 256-539-1347; email: rvinces@hiway.net; web: www.springcovespeedway.com/SpringCove.htm

ARIZONA

HobbyTown Raceway, Tucson, Arizona 85713; Jay, (520) 882-8888; web: www.hobbytown.com

HobbyTown U.S.A., Phoenix, Arizona 85044; Doug McFarland, (480) 598-5282

R/C Sports Mania, Phoenix, Arizona 85017; Gary Dick, (602) 278-3671

Scottsdale R/C Raceway, Scottsdale, Arizona 85251; Scott Anfinson, 480-945-2186

ARKANSAS

Alison OffRoad RC Raceway, Little Rock, Arkansas 72206; Steve Alison, (501) 490-1227; email: jason@alisonoffroad.com; web: www.alisonoffroad.com

Grand Slam Hobby, Ft. Smith, Arkansas 72901; Bryon Shumate, (501) 648-1994; web: www.gshobby.com

Sparks R.C. Raceway, Paragould, Arkansas 72450; Tommy Sparks, (870) 239-3606

CALIFORNIA

Capital City R/C, Sacramento, California 95829; Homer, 916-383-3445; email: lanno@pacbell.net; web: www.capitalcityrc.com

Castle Hobbies, San Jose, California 95124, (408) 377-3771

CCRCCC, California City, California 93505; Josh Geiger, (760) 373-2537; email: gorace@ccis.com

Crystal Park Raceway, Compton, California 90202-4925; James Reese, 310-631-0307; email: mailto:info@crystalparkraceway.com

Delta R/C Raceway & Hobbyshop, Antioch, California 94509; Rick or Steve, (925) 778-2965; web: www.deltarc.com

Extreme RPM Hobbies, Grand Terrace, California 92313; Bobby Haney, 909-370-3379; email: extremerrpmracing@aol.com; web: www.extremerrpmracing.com

Hobby Central Raceway, Poway, California 92064; Lee, (858) 513-0373; web: www.hobby101.com

Hobby World, San Jose, California 95129; Guy Bassett, (408) 873-2109

Hot Rod Hobbies, Saugus, California 91350; Jimmy Babcock, (661) 255-2404

Jake's Performance Hobbies, Rohnert Park, California 94928; Jake, (707) 586-3375; email: JPHRacing001@aol.com

Paradise Hobbies, Paradise, California 95969; David Lafabregue, (530) 877-6447; email: paradisehobbies@aol.com

Pure Adrenaline RC & Hobby, Sonoma, California 95370; Matt, (209) 536-6232; email: contact@pahobby.com; web: www.pahobby.com

Racer's Haven Raceway, Bakersfield, California 93309; Greg Cooper, 661-835-0441; web: www.racers-haven.com

Rescue Mini R/C Speedway, Rescue, California 95672; Bruce Pease, (530) 621-3948; web: www.innercite.com/~rccracing/

Ripon R/C Speedway, Ripon, California 95366; Dan Tanis, (209) 599-5160

Sacramento RC Racing & Hobbies, Sacramento, California 95824; Andreas Muller, (916) 424-4001; email: andreas123@earthlink.net; web: www.77sunset.com

Showtime R/C Speedway, Bakersfield, California 93301; Don Risner, 661-328-1481; email: showtimespeedway@aol.com; web: www.showtime-speedway.com

So Cal R/C Raceway, Huntington Beach, California 92646; Jim or Lana, 714-963-7484; email: info@socialrc.com; web: www.socialrc.com

SpeedWorld Raceway, Roseville, California 95678; Billy Bowerman, 916-783-8864; email: speeddog@mindsync.com; web: speedworldraceway.com

The Dirt Valley R/C Racepark, Hemet, California 92544; Joe Christenson, (909) 925-7592

Ventura RoadRunners, Camarillo, California 93010; Big Al, 805-564-4144; email: dudebigal@aol.com; web: www.venturaroadrunners.com

First Coast Speedway, Jacksonville, Florida 32211; Bobby Phillips, 904-716-0861; web: www.firstcoastautoracing.com

G&C Hobby Raceway, Lantana, Florida 33462; George, 561-547-3812; email: gnhobbies2@cs.com; web: www.gnhobbies.com

GB's Hobbies, Port St. Lucie, Florida 34952; Track Owner, 561-460-2844; email: qaircrt@bellsouth.net

Grand Prix RC-Club, Ft. Pierce, Florida 34945; Luther Peterson, 772-473-2130; email: LWPSPEED@aol.com

Gulf Coast RC Car Club, Naples, Florida 34105; Mark Benfield, 941-774-7116; email: teamnofear@aol.com

COLORADO

MHOR R/C Raceway, Aurora, Colorado 80011; Jess A. Brockman, (303) 343-0151; email: questions@mhorrcc.com; web: www.mhorrcc.com

Valley West Off-Road RC Club, Grand Junction, Colorado 81504; Jodie Grein, 970-242-1412; email: geerhed@gj.net; web: www.gj.net/~geerhed/vworcind.html

CONNECTICUT

K&N R/C Speedway Inc., Stafford Springs, Connecticut 06076; Jim or Bill, (860) 684-9896

Manchester Hobbies, Manchester, Connecticut 06040; Jim or Mike Tierini, (860) 643-4768

R/C Madness, Enfield, Connecticut 06082; Christopher Marcy, (860) 741-6501; email: cmarcy@rcmadness.com; web: www.rcmadness.com

Xtreme Radio Control, New Milford, Connecticut 06776; Paul or Pete, (860) 354-4703

DELAWARE

ESRC, Seaford, Delaware 19973; Bill Auchterlonie, 302-734-2757/302-629-3944; email: aeromarine@erols.com

FLORIDA

B&T RC Central, Fort Walton Beach, Florida 32547; Mike or Tim, 850-863-1666

Daytona R/C Racing Assoc., Ormond Bch., Florida 32174; Bill Flaherty, 386-676-9001; email: bji@bestnetpc.com; web: daytona-rc.homeip.net

Farmers Hobby Shop & Raceway, Tampa, Florida 33619; Greg Cardone, 813-248-3314; web: www.farmershobby.com

Sarasota RC Speedway, University Park, Florida 33420; Jim Wilson, (941) 358-7047

South Palm Beach Racers, Boca Raton, Florida 33486; Mike Fazio, 561-338-5367; email: epine01@bellsouth.net; web: <http://communitylink.gopbi.com/group/spbrclub>

Superior Hobby R/C Parking Lot Racing, Casselberry, Florida 32707; (407) 834-9299; email: racing@superiorhobbies.com; web: www.superiorhobbies.com

SWF RC Car Club, Fort Myers, Florida 33907; Mike Nardone, 941-278-1295; email: swfrcclub@yahoo.com; web: swfrcclub.tripod.com/swfrcclub

Tallahassee R/C Speedway, Tallahassee, Florida 32301; Roland Costine, 850-671-2814; email: idothtre@hotmail.com; web: www.geocities.com/rcdude1/rcars.htm

Tampa R/C Raceway, Seffner, Florida 33564; Carole Raimondi, 813-655-6366; email: carolehobbytown@aol.com

West Coast R/C Club, Lutz, Florida 33549; J.R. Sanyet, President, 813-991-0168

Augusta R/C Racers Club, Augusta, Georgia 30909; Darren, 706-860-5608

Dalton Motorsports, Dalton, Georgia 30721; Keith Manton, 706-226-6699; email: dms0@dalton.net

Hobby Town Raceway, Columbus, Georgia 31909; Frank Bastos, (706) 660-1793; email: fbastos@mindspring.com; web: www.hobbytown.com

Primetime Raceway, Calhoun, Georgia 30701; Tommy Jackson, 706-625-9037; email: primetimehobby@gccinternet.net; web: primetimehobby@gccinternet.net

My Rose Hobbies & Crafts, Jupiter, Florida 33458; Mark Watson, (561) 744-3800

NORRA, Naples, Florida 34104; Rob Dondorfer, 239-417-1099; web: www.norra.mainpage.net

Pro Hobbies Speedway, Apopka, Florida 32712; Jim, (407) 886-4615; email: prohobby@juno.com

KEY TO SYMBOLS

	Indoor		Concrete
	Outdoor		Asphalt
	Off-road		Minis & Micros
	On-road		On-site hobby shop
	Oval		AC power
	Dirt oval		Auto lap counting
	Carpet		Food available

SCORE-Phil Hurd Raceway, Pooler, Georgia 31322; Joe Ellis, 912-748-1988; email: jphilow@scad.edu; web: www.score-racing.org



The Flight Box Hobby Shop, Rome, Georgia 30161-6826; Leslie Duke, (706)-234-3014



GUAM

Guanah Off-Road Racers Mangilao, Dededo, Guam 96929; Mr. Yoshimura, 671-637-8682; email: thumbtack2@yahoo.com; web: guahanracers.net/firms.com/



HAWAII

A.S.I. Racing, Kapaa, Kauai, Hawaii 96746; Arnold Morales, 808-821-8132



Radio Control Assoc./Alaia Park Raceway, Pearl City, Hawaii 96782; Ace R/C Products, (808) 456-1279



Sandy Flemings, Pearl City, Hawaii 96782; Dave Caldwell, 808-456-7272; email: info@formula1-rc.com; web: www.formula1-rc.com



IDAHO

Almista Ranch R.C.s, Twin Falls, Idaho 83301; Casey Clements, (208) 733-8667; email: james_casey_clements@hotmail.com



Capital Dirtburners, Boise, Idaho 83702; Joe Thompson, 208-466-6334; email: internarchitect@yahoo.com; web: communities.msn.com/capitaldirtburners



DM Raceway, Pocatello, Idaho 83201; Mike Buffalo, 208-233-8163; email: dmraceway20m.com; web: www.dmraceway20m.com



ILLINOIS

As Racers, White Hall, Dekalb, Illinois 60115; AJ, 815-756-2772; web: www.asraceway.com



C.I.R.C.A., Jacksonville, Illinois 62650; Sport 'n' Hobby, (217) 245-1375



His N Hers Hobbies Raceway, Bloomington, Illinois 61701; Kevin Turek, 309-827-0204; email: hisnhershobbies@aol.com



HobbyTown USA, Oak Park, Illinois 60301; Mark or Fred, (708) 445-8056; email: htuoip@aol.com



Machesney Park Raceway, Machesney Park, Illinois 61115; Gina, (815) 282-1311; email: mpr30@aol.com; web: www.mpr30.homestead.com



Monroe R/C Raceway, Monroe, Illinois 60449; Roy or Roberta Moody, (708) 534-2422 (track), (708) 799-5597 (office)



Primetime Hobbies, Tremont, Illinois 61568; Don Davis, 309-925-9999; email: staff@primetimehobbies.com; web: www.primetimehobbies.com



Radio-Active Raceway, Bolingbrook, Illinois 60440; Jim, (630) 759-7557; email: RCvoltage@aol.com



Venture Raceways, Libertyville, Illinois 60048, (847) 549-9963



INDIANA

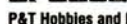
Bremen Racing Ent., Bremen, Indiana 46506; Dale Heuberger, 219-546-3807



Duneland Hobbies & Raceway, Portage, Indiana 46368; Ron, 219-763-1610; email: Rtrobaugh1@email.msn.com; web: www.dunelandhobbies.com



Hobby Barn Raceway, Terre Haute, Indiana 47802-9694, (812) 299-5773



P&T Hobbies and Raceway, Mitchell, Indiana 47446; Paul Weber or Tom Logsdon, (812) 494-6666; email: pnhobby@quest.net; web: www.pnthobby.com



Pete Russell's R/C Speedway, Elkhart, Indiana 46516; Pete Russell, 574-293-1827



R/C World of Indiana, Lynn, Indiana 47355; Joe Kolp, (765) 874-2464; email: rcworld@rcworld.com; web: www.RCWORLD.com



RC Barn, Monroe, Indiana 46772; Mark Lengerich, (219) 692-6600; email: bigdaddy@adamswells.com; web: www.rcbarn.com



RCRCR Raceway, Boonville, Indiana 47601; Scott Payton, 812-477-9661; email: spdrcracer@speedex.net; web: www.rcrcr.com



Schoolyard RC Speedway, Lagrange, Indiana 46761; David W. Bryan, 260-463-3558; email: dwbryan@ocf.net; web: www.rcspeedway.net

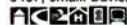


Showtime Lot Racing, Fort Wayne, Indiana 46819; Mike Romines, (219) 478-6099; web: fortwaynecr-park.tripod.com/



IOWA

Ames Radio Control Speed Assoc., Ames, Iowa 50014; Ryan Davis/Brad Scandrett, 515-231-3813/515-432-0467; email: Davismotors@aol.com



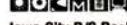
Dubuque R/C Speedway, Dubuque, Iowa 52002; Craig Schmal, 563-587-0218; email: rcraig@aol.com; web: www.geocities.com/dbqrc



Hobby Haven, Des Moines, Iowa 50322; Rick Marble, (515) 276-8785; web: www.hobbyhaven.com



Independence, Independence, Iowa 50644; Eugene Bachman, 319-266-3857; email: BachmanE2@hotmail.com



Iowa City R/C Racing Association, Iowa City, Iowa 52240; Hobby Corner, (319) 338-1788



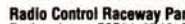
IRoar-Vinton Raceway @ Vinton Roller Rink, Cedar Rapids, Iowa 52402; Ed Karr, 319-362-1291; email: boxkarhobby@aol.com



Manly R/C Club, Manly, Iowa 50456; Bruce Hill, (641) 454-2025



Marble's Raceway, Des Moines, Iowa 50317; Rick Marble, (515) 262-7507



Radio Control Raceway Park, Fort Dodge, Iowa 50501-6746; Bernie Halverson, (515) 576-3780; email: bhalverson@dodgenet.com



RiverFront Speedway, Fort Dodge, Iowa 50501; Bernie Halverson, 515-576-3780 (515-571-1717 Race Day); email: bhalverson@dodgenet.com



Wild Bill's Raceway, Knoxville, Iowa 50138; William Anderson, Jr., 641-842-5973; email: wildbillz@iowatelecom.net; web: www.wildbillsracing.com



KANSAS

Air Capital Hobbies Raceway, Wichita, Kansas 67212, (316) 721-4164



D&B Raceway, Menlo, Kansas; Ron Ball, (785) 855-2370

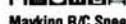


KENTUCKY

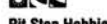
Coyote Raceway, Lexington, Kentucky 40505; Danny P., 859-253-9900 or 859-253-9330; email: hyperbola01@earthlink.net; web: www.coyotehobbies.com



Dixon's R/C Raceway, Hazard, Kentucky 41701; Jeff Dixon, (606) 436-4820; email: jeffdr1@hotmail.com



Mayking R/C Speedway, Mayking, Kentucky 41837; Jon Fields, 606-633-4700; email: jon1@se-tel.com



Pit Stop Hobbies, Paducah, Kentucky 42003; Robert or Rodney, 270-443-0052; email: pitstop1@apex.net



Trio Hobbies & R/C, Radcliff, Kentucky 40160; Maurice Johnson, (502) 351-7547



Wildcat Speedway, Nicholasville, Kentucky; David Bowles, 859-272-0231



LOUISIANA

Fast Pace Hobbies, Alexandria, Louisiana 71301; Joseph or Casey Toralba, 318-561-2070; email: fastpacehobbies@aol.com



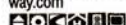
Gator R/C Raceway, Moss Bluff, Louisiana 70612; Tony Diaz, 337-855-3206; email: keltish@aol.com; web: homepage.mac.com/kmaples/



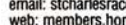
Hwy. 44 Hobby Shop, Gonzales, Louisiana 70737; Eric Olmstead, (225) 644-1773; email: eric209@aol.com



Red Stick R/C Raceway, Baton Rouge, Louisiana 70814; Michael Pino, 225-218-1002; email: redstickraceway@aol.com; web: www.redstickraceway.com



St. Charles RC Speedway, Destrehan, Louisiana 70047; Al Cazalot, (504) 764-0625; email: stcharlesracer@home.com; web: members.home.net/stcharlesracer



MAINE

Central Maine R/C Speedway & Hobbies, Fairfield, Maine 04963; David Prescott, (207) 453-4588; email: rrcracer@mint.net



Clay Bowl R/C Hobbies, Greene, Maine 04236; Pat Cap, (207) 946-5003



MARYLAND

Coles Race Way, Waldorf, Maryland 20602; Cole Brincefield, (301)-843-1386; email: kbrincefield@cs.com



GPA Hobbies, Crofton, Maryland 21114, 301-858-0004



The Track, Gaithersburg, Maryland 20877; Mimi Wong, (301) 417-9630; email: mimitrtrack@yahoo.com; web: www.trctrack.com



MASSACHUSETTS

Big Boys Toys, Fall River, Massachusetts 02723; Track Owner, 508-677-9400



East Templeton Model Raceway, Templeton, Massachusetts 01468; Keith Anderson, 1-978-632-1619; email: keith@glowplug.com; web: glowplug.com



Hi-Tech Hobbies, Raynham, Massachusetts; Ruben, (508) 880-5373



Megadrome Raceway, North Adams, Massachusetts 01247; Bob Blanchette, 413-743-7223



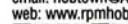
Northboro Speedway, Northboro, Massachusetts 01532; Bob Trimble, 508-393-8087 or 393-2691



R/C Excitement, Inc., Worcester, Massachusetts 01605; Todd Anderson, 508-753-8676; email: rcexcitement@aol.com; web: www.rcexcitement.com



RPM RC Raceway, Abington, Massachusetts 02351-1094; Richard Tonetti, (781) 857-2300; email: hobtown@AOL.com; web: www.rpmhobbys.com



MICHIGAN

Backyard R/C Raceway, Brown City, Michigan 48416; Tom Jones, (810)793-0257; email: JONES_TNT_2000@YAHOO.COM



D.R. R.C., Taylor, Michigan 48180; Bobby or Fred, (734) 287-7405; web: www.downriversracing.8k.com



E.U.P., Kincheloe, Michigan 49788; Joel Wiggins, 906-495-3503



Fastraxx, Brownstown, Michigan 48173; Greg Yingling, (734) 379-8980; email: fast3@hotmail.com



Freedom Hill R/C Raceway, Sterling Heights, Michigan 48312; Jim McKenna, (810)268-3996



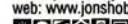
Great Lakes Racers Club, Grand Rapids, Michigan 49558; John Warner, 616-838-2231; email: Gr8LksRacers@aol.com; web: www.rogers.3.com/glr/



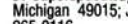
Hideaway Raceway, Napoleon, Michigan 49201; David Carlisle, 1-517-536-8821; email: adcarlisle1@netscape.net



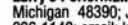
Jons Hobby, Mt. Pleasant, Michigan 48858; Jon Beutler, (517)773-5412; email: jonshobby@earthlink.net; web: www.jonshobby.com



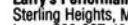
JT Superspeedway, Battle Creek, Michigan 49015; Jerry or Sam, 616-965-0116



Larry's Performance R/Cs, Commerce, Michigan 48390; Jess or Opie, 248-926-1140; email: lprcs@qwest.net



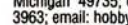
Larry's Performance RC Carpet Track, Sterling Heights, Michigan 48314; Larry, 586-997-4840; email: lprcs@qwest.net



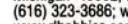
Lazer RC Speedway, Adrian, Michigan 49221; Russ Johnson, (517) 263-2806



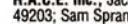
N.M.R.C.C. Speedway, Gaylord, Michigan 49735; Gabe, (989) 732-3963; email: hobby-toy@voyager.net



R&L Hobbies & Racing, Portage, Michigan 49002; Rex Simpson, (616) 323-3686; web: www.rlhobbies.com



R.A.C.E. Inc., Jackson, Michigan 49203; Sam Sprang, (517) 787-9161



Raw Roots Race Tracks, West Olive, Michigan 49460; Roy Bennink, (616) 399-9338



Village Hobbies, Hesperia, Michigan 49421; John Fossick, 231-854-1374; email: vhracing@triton.net



Village R/C Raceway, Decatur, Michigan 49045; Chuck Nolke, (616) 423-7878



MINNESOTA

Bruce McCullough Memorial R/C Speedway, Cloquet, Minnesota 55720; Howie Port, (218) 879-5174; email: howies_house@hotmail.com



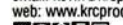
Country R/C Raceway Park, Belview, Minnesota 56214-8115; Charles L. Steff, 507-641-8115



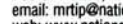
J's Radio Control Race Park, Starbuck, Minnesota 56381; Jay Campbell, (320) 239-4827



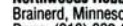
Kevin's Off-Road Raceway, Crookston, Minnesota 56716-2317; Kevin Altepeter, (218) 281-7523; email: kevin@krcproducts.com; web: www.krcproducts.com



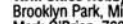
National Speedway, Fridley, Minnesota 55432; Steve Hedenlund, 763-571-9283; email: mrtip@nationalhobby.com; web: www.nationalhobby.com



Northwoods Hobby Raceway, Brainerd, Minnesota 56401; John or Doug, (218) 829-9257



Twin Cities Hobby & Raceway, Brooklyn Park, Minnesota 55443; Mark O'Brien, 763-569-5069; email: wooduster@msn.com; web: www.twincityhobby.com

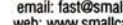


MISSISSIPPI

Meridian RC Speedway, Meridian, Mississippi 39302; Joe or Pearce, 601-483-7000



Small Cars Unlimited, Jackson, Mississippi 39212; Ed Hill, 601-372-3278; email: fast@smallcarsunlimited.com; web: www.smallcarsunlimited.com



X-Treme RC, Saucier, Mississippi

Real Blue Vue R/C, Kansas City, Missouri 64133; Steve Hale, (816) 358-0238; email: hrealrc@aol.com; web: www.geocities.com/real_rc_raceway

NEW HAMPSHIRE

Real R/C Raceway, Pleasant Hill, Missouri 64080; Steve Hale, (816) 540-5584; email: hrealrc@aol.com; web: www.real-rc.com

Showtime Speedway, Bakersfield, Missouri; Don Risner, (601) 203-1481

MONTANA

Garden City R/C Speedway, Missoula, Montana 59801; Brian Culp, (406) 549-7992; email: gardencityrc@msn.com

Magic City Racers, Billings, Montana 59102; Bryan Grummett, 406-656-8266; email: jsaves@trslution.net; web: www.magiccityrc.com

RC Offroad Association of Racing (ROAR), Libby, Montana 59923; Jamie, 406-293-6506; email: shark-boyet@hotmail.com

NEBRASKA

Hadar R/C Raceway, Norfolk, Nebraska 68701; John Schoenauer, (402) 644-7922

Hobby Town Raceway, Lincoln, Nebraska 68505; Chris or Chad, 402-434-5056; email: eaststore@aol.com

Hobby Town USA Raceway Park, Lincoln, Nebraska 68508; Chad or Chris, 402-434-5056; email: east-store@aol.com

NECAR Raceway, Grand Island, Nebraska 68801; Steve Blayney, 308-382-0920; email: spinkig@nebit.com

O.N.R.A.D., Omaha, Nebraska 68104; CoRK Jacobs, (402) 556-8674

OTWG Carpet Raceway, Norfolk, Nebraska 68701; John Schoenauer, (402) 644-7922

The Salvation Army Speedway, Omaha, Nebraska 68164, 402-734-3414

NEVADA

Dansey's Indoor R/C & Hobbies, Las Vegas, Nevada; David Lugo, (702) 453-RACE or (888) 675-8963; web: www.danseys.com

Las Vegas R/C Raceway, Las Vegas, Nevada 89139; Patrick Quinn, 702-365-1396; email: patrick-quinn98@hvcn.com; web: www.lasvegasrcraceway.com

T-Rix bikes & R-C shop, Elko, Nevada 89801; Gary Perkins, (775) 777-8804; email: mtman14k@hotmail.com

NEW HAMPSHIRE

Hilltop RC, Troy, New Hampshire 03465; Pete Bastoni/Jim MacPherson, 603-242-3222; email: hilltoprc@netze-ro.net; web: hilltoprc.homestead.com

Lakes Region R/C Speedway, Gilford, New Hampshire 03246; Louie Blais, 603-524-2909; email: lakeregionrc@homestead.com; web: www.lakesregionrc.com

RT 106 Racepark, Pembroke, New Hampshire 03275; David Daniels, 603-224-7223; email: david@collectracing.com; web: www.106racepark.com

NEW JERSEY

America's Hobby Center Inc., North Bergen, New Jersey 07047; John Many, (201) 662-0777; web: www.ahc1931.com

Back Track Raceway, Hammononton, New Jersey 08037; Bob W., 609-214-5016

Checkerboard Raceways, Elwood, New Jersey 08217; Ray Murray, 856-629-9413; email: RaysTrack@webtv.net

Family Hobbies Raceway, Vineland, New Jersey 08360; Linda Vogel, 856-696-5790; email: familyhobbies@yahoo.com; web: familyhobbies.20m.com

Jackson RC Club, Jackson, New Jersey 08527; Al Sardano, 732-364-6422; email: tazzdy@optonline.net; web: www.jacksonrc.com

Jefferson Speedway, Oak Ridge, New Jersey 07438; Jim, (973) 697-7525

Millville R/C Oval & Roadcourse, Millville, New Jersey 08332; William Denstoz, 856-327-4640

On Trax Hobbies, Browns Mills, New Jersey 08015; Joseph DiGirolamo, (609) 735-0422

PottBellys R/C Speedway, PittsGrove, New Jersey 08360; Drew Anastasio, 856-875-2132; email: pottbelly@pottbellysrc.com; web: www.pottbellysrc.com

South Jersey Cost Controlled Racing, Sicklerville, New Jersey 08081; Ray Murray, 856-629-9413; email: RaysTrack@webtv.net; web: community.webtv.net/RaysTrack/South JerseyCost

SpeedPro Dragway, Elizabeth, New Jersey 07206; Albie Nizolek, 908-351-5080; email: funnycar176@aol.com; web: www.speedpro.org

The Race Place, Farmingdale, New Jersey 07731; John Fary, (908) 938-5215

Wacky RC Raceway, Roselle, New Jersey 07203; Tony Williams or Kimble Wright, (908) 241-6700

NEW MEXICO

Albuquerque R/C Off-Road Raceway, Albuquerque, New Mexico 87120; Bill Mitchell, (505) 243-0681 (W); 898-6181 (H); email: email-bill@home.com

Speed Zone, Clovis, New Mexico 88101; Brad Ferguson, 505 769 1737; email: speedzone@yucca.net

NEW YORK

BarnStormers Raceway, Chester, New York 10918; Lou Sytsma, 845-469-BARN(2276); email: iamysytsma@hotmail.com; web: www.barnstormers.0catch.com/

Brennan's RC Hobbies, Vernon, New York; Bill or Tom Brennan, (315) 829-4930

Brooklyn Hobbies, Brooklyn, New York 11234; Chris Palermo, 718-951-2500; email: brooklynhobbies@aol.com; web: www.brooklynhobbies.com

Bruckner Racing, Bronx, New York 10465; Thomas Baffers Sr., (800)-288-8185

C&C Speedway, Binghamton, New York 13903; Eric Boyd, (607) 733-2044

Capital District Radio Controlled Stock Car Club, Loudonville, New York 12211; Peter Willis, (518) 482-7128; email: rcpete12211@yahoo.com; web: cdrcsc/homestead.com

Chipmunk Hill R/C Speedway, Theresa, New York 13691; Ted or Pete House, (315) 628-5065

Competition Hobby Supplies & Speedway, Cohoes, New York 12047; Howie Cummings, 518-786-3622; email: howard.cummings@verizon.net; web: www.competitionhobbysupplies.com

East Coast R/C Hobbies, Brooklyn, New York 11204; John Giangrande, 718-627-3814

Fastraks, Hogsburg, New York 13655; Mark Castonguay, (518) 358-3686; email: froghob@northnet.org; web: www.fastraks.8m.com

Hobby Zone Raceway, Ozone Park, New York 11417; Brian, Sean or Adam, (718) 641-9001; email: moonchaserwolf@aol.com

Lil Wheels Raceway, Oswego, New York 13126; Bill Meyer, 343-6566; email: lilwheelsraceway@hotmail.com; web: lilwheelsraceway.tsx.org

Long Island Raceway, Farmingdale, New York 11735; James, (516) 845-7223; web: www.raceway.com

MTW Raceway, Cato, New York 13033; Tim, 888-39-HOBBY; 315-626-2029; email: docsavage@mtwraceway.com; web: www.mtwraceway.com

PRO Speedway, Cattaraugus, New York 14719; Marc Pritchard, (716) 257-3101

Radio Hill Raceway, Dundee, New York 14837; Bill or Greg, 607-243-8641 (Bill); 607-243-7899 (Greg)

Rampage R/C & Hobbies, Hyde Park, New York 12538; Brian Walker, (845) 229-1379

South Shore Hobby & Raceway, Coram, New York 11727; Benny or Bonnie, 631-696-8500; email: sshobby@northeast.net; web: www.southshorehobby.com

Southern Tier Raceway, Owego, New York 13827; Anita Harding, (607) 687-5395

TARMAC Ultimate R/C Raceways, Poughkeepsie, New York 12603; Todd Plass, 845-342-5409 (Todd); 845-454-8276 (Track-Sundays); email: toddp@tarmacraceway.com; web: www.tarmacraceway.com

Walt's Hobby, Syracuse, New York 13209; Bruce, 315-453-2291; web: www.walts-hobby.com

Willis Hobbies R/C Speedway, Mineola, New York 11501; Ken Ford, 516-746-3944; web: www.willishobbies.com

NORTH CAROLINA

Chatham R/C Raceway, Bear Creek, North Carolina 27207; Dwight Fields, (919) 898-4518; email: chatham_rc_speedway@yahoo.com; web: www.chathamrcspeedway.com

R.C.R. Speedway, Salisbury, North Carolina 28147; Ronnie Linker, (704) 637-2565

Race City Motor Speedway, Mooresville, North Carolina 28115; Ray Kelly, 704-660-FAST; email: Kellyrcms@cs.com; web: racecitymotorspeedway.com

Rosewood RC Speedway, Goldsboro, North Carolina 27530; Glenn Esam, 919-734-7754; email: gelam49@hotmail.com; web: www.rosewoodrc.com

Sandhills Raceway, Southern Pines, North Carolina; Mike Russel, 910-245-4450; email: mrmrc@mindspring.com; web: www.sandhillsraceway.com

Southern RC Motorsports Club, Shallotte, North Carolina 28459; Eddie Ferster, (910) 754-8528

The Antique Barn, Wilson, North Carolina 27893; Steve, (252) 237-6778; email: antiquebarn@es.net

NORTH DAKOTA

Grand Forks Remote Control Racers, Grand Forks, North Dakota 58201; Dan Miller, 701-746-9910; email: dandmiller@juno.com; web: mule.puah.org/gfrcr

AK Hobby & Raceway, Cincinnati, Ohio 45211; Tim Tolle, (513) 661-7080; email: tim@akhobby.com; web: www.akhobby.com

American Ohio Sprint Car, Wickliffe, Ohio 44092; Gary Waldheim, 440-944-9966; web: www.aosca.8m.com

Black Swamp RC Car Club, Toledo, Ohio 43623; Riders Hobbies, 419-843-2931; email: ridersrcclub@webtv.net; web: www.blackswamprc.cjb.net

CORCAR/Sams Club, Galloway, Ohio 43119-8732; Bill Stevenson, (614) 870-7159

D&J R/C Raceway, Orrville, Ohio 44667; Don, (330) 682-4266

DeFosse Raceway, Ripley, Ohio; Greg DeFosse, (937) 377-2063

Extreme RC Raceway, Wheelersburg, Ohio; Kevin Rowe, (740) 574-4190; email: extremerc2000@yahoo.com; web: www.ohioxcrc.com

Hobbyland Raceway, Proctorville, Ohio 45669; Craig Harber, 740-886-0502or 740-886062; email: pitrow-eracing@webtv.net; web: hobbyland-raceway.homestead.com

Medina R/C Raceway, Medina, Ohio 44256; Mr. Bill, 330-723-0255; email: mr.bill@nls.net

Mid Ohio Dirt Oval, Lexington, Ohio 44904; D&D Hobby Center, (419) 884-0001

Nothing But Air R.C. Track, Logan, Ohio 43138; Gary Lloyd, 740-385-0288

Ohio Valley OffRoad R/C Raceway, Jerusalem, Ohio 43747; Kevin Wilson, (740) 926-1738; email: consol@1st.net; web: www.ovor.8m.com

Outlaw Speedway, Lexington, Ohio; Eric Radio, 419-884-0001; email: ramerjrc@aol.com; web: roditorval.freeservers.com

River Rat Racing, Ripley, Ohio 45167; Jon Faris, 937-392-9298; email: honey3@bright.net; web: www.riverratraceway (under construction)

T.S.R.C.A.R., Hamilton, Ohio 45011; Dennis Young, (513) 367-5634; email: scaleracr@aol.com; web: www.tri-statercautoracers.com

TARCAR, Toledo, Ohio 43617; Bill Bridges, (419) 826-3859

Ultra Racing R/C Hobby and Track, Hamilton, Ohio 45015; Ed Lewis, 513-863-7342; email: UltraRacing@aol.com; web: www.ultraracing.com

Van Wert R/C Raceway, Van Wert, Ohio 45891; Mark Davis, (419) 232-2112

Y-City Hobby & Speedway, Zanesville, Ohio 43701; Kevin McKenna, (740) 455-3025; email: Kevin@ycity-hobby.com; web: www.ycityhobby.com

Action Hobbies, Tulsa, Oklahoma 74145; David Cole, (918) 663-8998; email: acthob@aol.com

Action RC Speedway, Oklahoma City, Oklahoma 73135; Jerry Hawthorne, (405) 670-7770; email: ginnaf@flash.net; web: www.actionrc.com

Adams Creek R/C Speedway, Broken Arrow, Oklahoma 74014; John Beighle, (918) 355-1416

Competition R/C, Oklahoma City, Oklahoma 73149; James or Louise Brown, (405) 634-0809; email: compcr1@aol.com

Enid R/C Speedway, Enid, Oklahoma 73703; Darin Pendleton, (580) 554-9400; email: darin@enid.com; web: www.enidrcracing.com

HobbyTown USA, Norman, Oklahoma 73072; Todd Jensen, (405) 292-5850

Wings N Things Raceway, Tulsa, Oklahoma 74105; Heath Anderson, (918) 745-0007

KEY TO SYMBOLS

- | | | | |
|--|-----------|--|--------------------|
| | Indoor | | Concrete |
| | Outdoor | | Asphalt |
| | Off-road | | Minis & Micros |
| | On-road | | On-site hobby shop |
| | Oval | | AC power |
| | Dirt oval | | Auto lap counting |
| | Carpet | | Food available |

OREGON

Competition Racing Association, Portland, Oregon 97230; Mark Taylor, (503) 761-1334; email: crajodi@qwest.net or cramark@qwest.net; web: home.attbl.com/~cra/

Dirt City RC, Albany, Oregon 97321; Doug Vertrees, (541) 791-1089; email: quicktemper@aol.com

R/C Plus Hobbies Raceway, Salem, Oregon 97302; Ron Smith, (503) 364-9188; email: rclplus@rcplus.com; web: www.rcplus.com

R/C Speed Center, Medford, Oregon 97501; Gene & Betty Jean Skelton, 541-779-8298

Rose City Scale Racing, Milwaukie, Oregon 97222; Rick Strauss, (503) 631-2929; web: www.rc-rs.com

PENNSYLVANIA

Bumps & Jumps RC Speedway, Middletown, Pennsylvania 17057; Chris McKinney, 717-728-4613; email: chrismc@bigfoot.com; web: www.bumpsandjumps.com

Courtview Raceway, Washington, Pennsylvania 15301; Aaron Stimmel Jr., 724-228-8396

DC Ultra Trax, Warminster, Pennsylvania 18974; David Cowan, (215) 672-5200; web: www.jrchobbies.com

Dreamboat Hobbies, Warren, Pennsylvania 16365; Louie Dussia, (814) 723-8052; email: dreamboat77@yahoo.com

J&K Hobbies and Raceway, Jersey Shore, Pennsylvania 17740; Jason Corter or Kevin Casbeer, 570-398-8171; email: rcmaniac01@msn.com

Kranzel's R/C Raceway & Hobbies, Lemoyne, Pennsylvania 17043; David or Stuart Kranzel, (717) 737-7223; web: www.kranzelsrchoobbies.com

Little Plum R/C Hobbies, Lock Haven, Pennsylvania 17745; Larry Duck, (570) 769-1984

Marshall's R/C Raceway, Honesdale, Pennsylvania 18431; Bill or Dot Marshall, (570) 729-7458

McCullough's Offroad, Sarver, Pennsylvania 16055; Doug McCullough, (724) 352-0116; email: DMcCull323@aol.com

Newville RC Speedway & Hobbies, Newville, Pennsylvania 17241; Randy or Mike, 717-776-5568; email: newvillersspeedway@yahoo.com; web: www.newvillersspeedway.com

Pit Stop Hobbies, Mount Joy, Pennsylvania 17552; (717) 653-6222; email: pitstophobbies@pitstophobbies.net; web: www.pitstophobbies.net

Racers Edge R/C Racing & Hobbies, Smethport, Pennsylvania 16749; Rick Morgan or Johna Simar, (814) 887-9256; email: racersedger@mindspring.com; web: www.racersedger.com

RB Motorsports & Hobby, Northumberland, Pennsylvania 17857; Rick Bunting, (570) 473-8711

RC Avenue II, Bradenville, Pennsylvania 15650; Chris Demyan, 724-537-9592; email: 12ss@msn.com

RC Dirtburners Club, Windber, Pennsylvania 15963; Bruce Schmidt, (814) 266-4118; email: rckidd1@cs.com

RC Outfitters RCO Raceway, Hanover, Pennsylvania 17331; Chris Shaffer, (717) 633-9490; web: www.rcohobbies.com

Riverside Raceway, Warren, Pennsylvania 16365; Jeff, (814) 723-4211

Staub Bros. R/C Speedway, Gettysburg, Pennsylvania 17325; Todd or Scott Staub, 717-334-8488; web: www.staubbrothers.com

The Hobby Depot, Malvern, Pennsylvania 19320; Chris McGovern, 610-725-8317

The Raceway at River Junction, Beaver, Pennsylvania 15009; Sam or John, (724) 728-5571; email: riverjct@stargate.net

Thunder Hobbies Raceway, Indiana, Pennsylvania 15701; Brent or Lori Marshall, (724) 349-2639; email: thunderhobbies@hotmail.com

Track 84, Narran, Pennsylvania 17555; Andrew Flexer, (717) 354-6503

Trains & Lanes Raceway, Easton, Pennsylvania 18045; Jeff Setzer, (610) 253-8850 or (800) 447-4891; email: trainslanes@aol.com

TRP, Kingston, Pennsylvania 18704; Rob Yeager, 570-283-3066; email: rcrob99@aol.com

WillCam Raceway, Punxsutawney, Pennsylvania 15767; James Campbell, (814) 939-4251

PUERTO RICO

Bayamon R/C Park, Bayamon, Puerto Rico 00956; Damian Cruz & Javier Rivera, (787) 869-8092 & 401-2770; email: damian@bayamonrcpark.com; web: www.bayamonrcpark.com

Hacienda Mu0oz R/C Track, Juana Diaz, Puerto Rico 00795, (809) 837-7083

Hi-Speed C Raceways, San Juan, Puerto Rico 00926; Carlos Ortiz, (787) 283-0198; email: hispeed@hotmail.com; web: www.hispeedhobby.com

Mech Tech Touring Park, Caguas, Puerto Rico 00725; Humbert (Tito) Lizardi, (787) 739-1572; email: tlizardi@hotmail.com

Tropical Raceway Track, Manati, Puerto Rico 00674; Hector Pabon/George Pabon, (787) 854-8884 or (787) 884-9294; email: trophob@coqui.net

RHODE ISLAND

Insane Toys RC race track, Providence, Rhode Island 02909; Jose Jimenez, (401) 421-8878; email: Havokt@aol.com; web: members.home.net/havokt/

SK Hobbies Inc., Johnston, Rhode Island 02919; Slim or Keith, (401) 453-1440

SOUTH CAROLINA

Atomic Racers, Aiken, South Carolina 29803; Bill Jackson, 706-855-0846 or 803-725-1664

Carolina R/C Speedway, Easley, South Carolina 29640; David, 864-295-1209; email: cprahlrc@mindspring.com; web: www.carolinarc.com

D&S Hobbies R/C Track, Hartsville, South Carolina 29550; Don Dietz, 843-383-0017; email: dshobbydon@aol.com; web: www.dshobbies.com

Darlington R/C Raceway at Hobbies & More, Darlington, South Carolina 29532; Jerry Pollard, (843) 393-0355; web: www.hobbiesmore.com

Hi Voltage Raceway, Anderson, South Carolina 29625; Whitner Bowen, 1-864-225-8680; email: jahlon247@aol.com

The Grove Racing Center, Rockhill, South Carolina 29730; Don Faris, (803) 327-4121; web: www.hobbystop.com

The Grove Racing Center, Rockhill, South Carolina 29730; Don Faris, (803) 327-4121; web: www.hobbystop.com

SOUTH DAKOTA

Action R/C Raceway, Mitchell, South Dakota 57301; Royal or Roger, Royal-day-605-996-9871; Roger-eve-605-996-2897; email: pioneer@santel.net

Boomerangs Raceway, Hartford, South Dakota 57033; Ed Smithback, (605) 528-7345

Dakota Off-Road Racers, Aberdeen, South Dakota 57401; Kevin, 605-225-5223

Grassland Racers, Black Hawk, South Dakota 57718; Ryan Logan, (605) 787-5632

SBK, Winner, South Dakota 57580; Broc Stout, (605) 842-2699

TENNESSEE

Hobby Town USA, Franklin, Tennessee 37067; Bobby Mills, (615) 771-7441; email: ht126@aol.com

MSA R/C Racing, Crossville, Tennessee 38555; D.R. Findley, (931) 456-0027

Need For Speed Raceway R/C, Chattanooga, Tennessee 37415; Ronnie Cox, (423) 876-9019

RC Speedway, Cleveland, Tennessee 37323; James Morgan, 423-472-7854 or 645-5771; email: jmorga59@bell-south.net

Robertson's R/C Raceway, Jackson, Tennessee 38301; Travis Robertson, 731-423-6984; email: RobertsonsRC@aol.com

SpeedZone Raceway & R/C Hobbies, Sweetwater, Tennessee 37874; Mike Henderson, 423-351-0055; email: speedzon@msn.com; web: www.speedzonraceway.com

W.O.W. Raceway, Beech Bluff, Tennessee 38313; Brad Jones, 731-247-1625; email: wowracer@bell-south.net; web: go.to/wowracing

TEXAS

215 Speedway, Abilene, Texas 79602; Clyde Gardner, (915) 673-2351

Al's Hobbies, San Antonio, Texas 78227; Alfonso Robles or Mark Beasley, 830-645-1050; email: alshobbies@usa.com; web: www.alshobbiesusa.com

Austex RC, Austin, Texas 78757; Michael, 512-458-2324; web: www.austexrc.com

B&B R/C Hobbies, Big Spring, Texas 79720; Walter Bumbulis, (915) 263-1790; email: b&brchobbies@apex2000.net

Big Mike's R/C Raceway, Longview, Texas 75604; Mike Sumrow, 903-297-7814

Drycreek Raceway, Greenville, Texas 75402; Micky Alphin, 903-527-5381; web: web.pulse.net/drycreek

Finishline Raceway, Hurst, Texas 76053; Damon Darnall, (972) 404-0463; email: Finishline@ev1.net; web: www.finishlinetrack.com

Hal's Hobby Raceway, El Paso, Texas 79936, (915) 591-2213; web: www.halshobbywarehouse.com

Hobby Center Race Track, Houston, Texas 77598; Issac Ben-Ezra, 281-488-8697; email: Hobbycenter@issac-smodels.com; web: www.hobbycenter.cc

Hobbytown USA, San Antonio, Texas 78209; Clark, (210) 829-8697; fax (210) 829-8707

Indy R/C World, Garland, Texas 75041; Steve Webster, (972) 271-4844; fax (972) 271-4502; web: www.indyrcworld.net

Js Action R/C, Pasadena, Texas 77503; Jack Williams, 713-946-8888; email: jayactionrc.net; web: www.jsactionrc.com

K&M Racing, New Caney, Texas 77357; Brent Mahaffy, (281) 399-9777

M&M Hobby Center, Bellaire, Texas 77401; Meir Ben-Ezra, 713-661-7137; email: mandm@mhmhobby.com; web: www.mhmhobby.com

MBRC, Dallas, Texas 75093; Mike Battelle; email: info@mbrc-racing.com; web: www.mbrc-racing.com

Mike's Hobby Shop Superstore & Raceway, Carrollton, Texas 75006, 972-242-4930; web: www.mikes hobbyshop.com

Reflex R/C, Houston, Texas 77055; Joseph Chen, (713) 464-4458; web: www.reflexrc.com

T&M Raceway R/C Drag Racing, Addison, Texas 75244; Marvin Jackson, (972) 416-0445; email: mjackson@tmraceway.com; web: www.tmraceway.com

The Rollcage, Greenville, Texas 75402; Guy Allen, (903) 883-0332; email: rollcage2000@therollcage.com; web: www.therollcage.com

Thompsons RC Raceway, Lufkin, Texas 75901; Mark Thompson, (936) 637-0093

W.E.S. Hobby Race, Beaumont, Texas 77701; Marty Walker, (409) 839-4929

X-Treme Hobbies, Round Rock, Texas 78664; Jeff Santos, (512) 310-0444 or (512) 388-3819

UTAH

Hobby Stop Raceway, Riverdale, Utah; Todd Hamilton or Beazer Martin, (801) 622-0841

Intermountain R/C Raceway, Magna, Utah 84044; David Mott, 801-250-8303; email: rcmother1@aol.com; web: members.aol.com/rcmother1

Outback Raceway, Ogden, Utah 84404; Steve Brown or Beazer Martin, 801-726-3458; email: Steve@rmrcr.com or Beazer@bibbs.com; web: www.rmrcr.com or www.beazershobbies.com

Vision Hobby, Orem, Utah 84057; Ken Rice, (801) 226-6226

VERMONT

Empire Hobbies Off-Road Raceway, Saint Albans, Vermont 05478; Scott or Jen, 877-446-2243; email: empirehobbies@surfglobal.net; web: www.vtvtv.com/empire-hobbies

R/C Toy Box Hobbies & Tracks LLC, East Haven, Vermont 05837; Raymond Richard, 802-467-8458; email: rctoybox@excite.com; web: myrctoybox.50megs.com

VIRGINIA

Brad's Hobbies, Staunton, Virginia 24401; Brad, (540) 885-3642; email: brads hobbies@erica.net

Brown Brothers Hobbies, Dumfries, Virginia 22026; Joe or Bob Brown, 703-221-5746; email: joe@bbhobbies.com; web: www.bb hobbies.com

DRCW Raceway, Virginia Beach, Virginia 23454; Les Modlin, 757-340-6681; web: www.debbiesrcworld.com

Hampton Roads R/C Drag Club, Virginia Beach, Virginia 23452; Garry Nelson, 757-399-8645; email: Garry@gsdragracing.com; web: www.HRRCCDC.com

KC's Radio Control & Repair, Lynchburg, Virginia 24503; Curtis or Kim Wright, (804) 384-8596

Linville Hobbies Raceway, Linville, Virginia 22834; Jerry Shenk, (540) 833-2222; email: linvillehobbies@juno.com; web: www.linvillehobbies.com

Olde Towne Hobby Shoppe, Manassas, Virginia 20110; Jeff Gough, (703) 369-1197; web: www.olde townehobby.com

Roanoke R/C Club, Salem, Virginia 24153; Chad Trent, 540-314-6257; email: roanokerc@aol.com; web: roanokerc.cjb.net

Shamroc Raceway, Winchester, Virginia 22601; Paul Wilson, 301-478-5355; web: www.shamroc.homestead.com/front-page.html

Stream Hobby Shop, Newport News, Virginia 23605; Rusty Kennedy, 757-591-0720; email: streamrc@aol.com; web: streamhobbyshop.com

The Tillyard, Dayton, Virginia 22821; Homer, 540-828-3476; email: homer@tillyard.com; web: www.tillyard.com

Thunder Road RC Speedway, Gordonsville, Virginia 22947; Robert Bingle, 434-296-6549; email: tripod@thunderroadrc.com; web: www.thunderroadrc.com

Tidewater R/C Speedway, Inc., Hampton, Virginia 23663; Jim Pike, Rob Marslette, Dave Pritchard, (757) 723-8927; email: zeey31@hotmail.com

WASHINGTON

A-Main Raceway, Vancouver, Washington 98685; Monty Coleman, (360) 571-8404; web: www.ainmainraceway.com

Burien Toyota R/C, Seattle, Washington 98148; Ray Meek, (800) 654-6456

Cedardale Raceway, Mount Vernon, Washington 98273; Craig, 360-755-9464

Fantasy World Raceway, Tacoma, Washington 98408; Dave Kleinman, (253) 473-6223; email: sales@fantasy-worldhobbies.com; web: www.fantasyworldhobbies.com

Four Season R/C Racing, Olympia, Washington 98506; Gary and Sharon Brown, (360) 491-2430

Hank Perry Raceway, Spokane, Washington 99023; Hal Hudson, 509-879-3503; email: halshudson@msn.com

HobbyTown USA, Tacoma, Washington 98408; HobbyTown USA Shop, (253) 474-7787

HobbyTown USA, Lynnwood, Washington 98037; Rich or Jamie, 425-774-0819; email: RHOBYYTOWN@AOL.COM

Paradise Raceway and Hobbies, Spokane, Washington 99207; Mark, 509-483-1843; email: paradiserc@hotmail.com; web: www.webseilers.com/paradise

Race City, Auburn, Washington 98002; Bruce, (253) 939-2515; email: auburn@pacifier.com

Rain City RC Raceway, Mukilteo, Washington 98021; Pete or Debbie Cartwright, 425-438-2454; email: info@raincityraceway.com; web: www.raincityraceway.com

Redmond Hobbies Raceway, Redmond, Washington 98052; Stan Ng, (425) 885-3639; email: info@redmondhobbies.com; web: redmondhobbies.com

Schmidt's Auto Parts, Marysville, Washington 98271; Jon Failla, (360) 653-8838; web: www.schmidtsraceraceway.com

Spokane Indoor Raceway, Spokane, Washington 99212; Brian Batch, 509-487-2122

Tacoma R/C Raceway, Tacoma, Washington 98406; Scott Brown, (253) 565-1935; web: www.tacomarccraceway.com

West Coast Hobby & Raceway, Richland, Washington 99352; Darren Shank, (509) 375-4995

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Mountwood Raceway, Vienna, West Virginia 26105; Tom Allen, 304-295-3234; email: ryan@ovrccc.com; web: www.ovrccc.com

Quiet Dell Raceway, Fairmont, West Virginia 26554; Darris, (304) 366-1441; email: Tateracing@aol.com

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ABC R/C Inc & Raceway, Waukesha, Wisconsin 53186; Dick Mathieson, 262-542-1245; email: Help@abcrchobby.com; web: www.abcrchobby.com

Best's Hobbies, Appleton, Wisconsin 54914; Peggy, 920-734-5244; email: appletonrc@hotmail.com; web: www.besthobbies.com

Gary's Hobby Center, Racine, Wisconsin 53403; Bill Phalen, 262-554-8884

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KDM Raceway, Abbotsford, Wisconsin 54405; Kevin Michlig, 715-223-4414; email: kdmhobby@pcpro.net; web: kdmhobby.homestead.com/kdmhobby.html

MARCCA Raceways, Monticello, Wisconsin 53570; 608-243-1778; email: asylumrc@yahoo.com; web: www.marcca.com

Mid-West Tri-Clone/Tri-Clone Off Road, West Bend, Wisconsin 53095; Dave Hilpert, 262-334-0429 or 262-626-2238; email: mwto@hnet.com; web: www.triclone.com

Pro-Star Racing, Green Bay, Wisconsin 54301; Chuck or Terry, (920) 494-1233 or (920) 469-5566

S&N's Trackside Hobbies and Raceway, Milwaukee, Wisconsin 53005; Scott Ernst, 262-783-4699; email: sernst@trackside.com; web: www.trackside.com

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Circuit M.R. Models, Buenos Aires 1428; Maximiliano Roballos, 54 11 4557 1000, fax 4780 1677; email: info@kyosho-argentina.com.ar; web: www.kyosho-argentina.com.ar

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AUSTRALIA

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A.C.T. Remote Control Car Club, Kambah, ACT; Rob Jorgensen, 61-2-6231-9925; email: bjorgo@isr.gov.au; web: users.bigpond.net.au/grj/actrccc.html

Aubry R/C Car Club, Aubry, New South Wales 2640; Ron Langman, 060-247-128

Brisbane Dirt Racing, Brisbane, Queensland 4053; Jeff Chandler, 07 3355 7476, 041 878 3201; email: smeg66@bigpond.com; web: www.gofastto/race

Canberra Off-Road Model Car Club, Narrabundah, ACT 2604; Graham Brown, 61-6-241-3070

Carine R/C Model Car Club, Inc., Greenwood, Western Australia; David Werner, 61-418922966

Castle Hill Radio Control Off Road Car Club, Castle Hill, New South Wales 2754; Peter Ellis, 0412 257 353; email: chrcorcc@nextcentury.com.au; web: www2.nextcentury.com.au/chrcorcc

Central Coast ORCC, Bateau Bay, New South Wales 2261; Peter J. Knight, 61-43-693-698

Illawarra RCECC, Albion Park Rail, New South Wales 2527; Mel or Andrew, 042-714-683

Lakeside R/C Racing Car Club, Lansvale, New South Wales 2166; R. Bartolozzi, 62-2-907-9800

Melton Electric Circuit Car Association, Melton, VIC 3337; Arthur Joslin, 61-3-9747-8805

Monaro Radio Control Car Club, Queanbeyan, New South Wales 2902; Graham Brown, 02 6241 3070; email: gbrown@webone.com.au; web: www.webone.com.au/~gbrown/mrccc/index.html

NSW Indoor R/C Raceway, Hurstville, Sydney 2220; Anthony Lee or Walter Ly, 02-9585-8810

Penfield Park, Adelaide, South Australia 5108; Trevor U'New South Walesorth, (618) 8289-5010

R.C. Speedway, Newcastle, New South Wales 2300; Andrew Dillon-Smith, 02-49265966

TFTR - Templestowe Flat Track Racers, Templestowe, Victoria 3106; Nigel George, see website; email: tftr@imagefile.net; web: drive.to/tftr

The Bayside Raceway, Brisbane, Queensland 4178; Nigel Bell, 07 3893 1864; email: mwr1@dingblue.net.au

Victorian Radio Control Drag Racing Association, Melbourne, VIC 3940; John de Tracy, 03 59820459; email: bjrno1@hotmail.com; web: www.ozemail.com.au/~john59/index.html

Wee Waa's Offroad RC, Burren Junction, New South Wales 2386; Shane, 61-02-6796-1339

Wodonga R/C Car Club, Wodonga, VIC 3690; Paul Townsend, 02-6056-0706; email: townsend175@ozemail.com.au

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R.O.A.R. (Radio Operated Auto Racing), St. Michael; Marva Clarke, (246) 427-3907

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ATR-Alka-Tele-Racing, Limburg; Alken, 0032-11-25-49-03

MBV-Kampenhout, Kampenhout B1910; Frank Mostrey, 0-16-65-75-18

Model Racing Club Oudenaarde (MRCO), 9700 Oudenaarde; Nicky Delmote, and fax: 32 55 30 36 25; email: mrco_racing@hotmail.com; web: mrco-racing.tripod.com

MRCZ, De Burg; Montie, 75-71-63

R.C.R., Retie 2470; A. Eelen, 32-14-379685

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C.A.A.R. Curitiba Associacao de Automodelismo Radiocontrolado, Curitiba, Puerto Rico 82650-530; Ronaldo Assumpcao, 55-41-354-2804

Electric Car Club R/C Santos, Santos, Sao Paulo 11065-001; Estevam or Arnaldo, 55-013-232-2536

Hobby Center, Brasilia, DF 70.273, 061-242-0488

Hobby Planet Racing Club, Campinas, Sao Paulo 13091901; Daniel, Helio, Luciano, 019 258 2768

Jungle Drive, Rio de Janeiro, PB 21940-490; Paulo Brito, (021) 396-0851 or (021) 393-7449

Off Roaders, Sao Paulo, CEP 05640; Waldir Ielpo, (055) 011-260-5628; fax: (055) 011-831-4931

Mini-Z Hobby Shop, Markham, Ontario L3R 0W4; Brian Pong, (905)940-0898; email: info@minizhobbyshop.com; web: www.minizhobbyshop.com

Prince George Radio Controlled Car Club, Prince George, British Columbia V2M 5R9; Doug Waller, 250-561-0035

CANADA

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Battlefield R/C Raceway, Cobourg, Ontario K9A 2G3; Tony Hopcraft, (905)373-8373; email: tonyhopcraft@yahoo.com; web: www.geocities.com/battlefield_rc_raceway/

C.A.R.C.A.R., Calgary; Simon Smith, (403) 280-9040; web: www.drive.to/carcar

Cactus Speedway, Ruthven, Ontario NOP 2G0; Terry Torelli, (519) 735-7122; email: osthunder@sympatico.ca; web: www.mnsi.net/~glenn/sparc.htm

Cam R/C, Coquitlam, British Columbia V3E 1K9; Roger Brown, 604-945-3888

Circuit J.C., St. Polycarpe, Quebec JOP 1X0; Jean Castellon, 450-265-3675

Circuit Teleguide ST Roch, ST Roch De L' Achigan, Quebec JOK 3H0; Gerald Beauchamp, 450-588-4254; email: gedoroam@colba.net; web: www.grcsr.com

Copetown Raceway, Copetown, Ontario; Adam Filipowicz; email: adamfilip@home.com; web: copetown-raceway.8k.com

Dynamic Hobbies, Nepean, Ontario K2E7S4; Fred Zufelt, (613) 225-9634; web: www.members.home.net/rcot-tawa

HobbyHobby P.L.R.C., Mississauga, Ontario L5M 1K8; Tom Bakonyi, 905-858-7978; email: Info@hobbyhobby.com; web: www.hobbyhobby.com

Honda House Motor Speedway, Chatham, Ontario N7M 1P9; John Elliot, (519) 354-5530

IROCC, Victoria, British Columbia V9B 5W9; Daryl Jones, (250) 478-8013; email: djones@shaw.ca

Johns Jump & Grind R/C Track, Waterville, Nova Scotia BOP 1V0; John Egan, 902-538-8920; email: john.egan@ns.sympatico.ca; web: www.jjagrc.com

J-T Traction Raceway, Napanee, Ontario K7R 8A1; N. O'Neill, (613) 354-0099

Kays Hobbies R/C Raceway, Moorefield, Ontario N0G 2K0; Doug Kay, 519-638-9990; email: dougk@golden.net; web: www.kayshobbies.place.cc

Leading Edge R/C Speedway, Kingston, Ontario K7M 3Y5; Mike and Tony Daicir, 613-389-4878

Mid-Canada R/C Auto Racing, Winnipeg, Manitoba R2J 4E6; Jason McBride, 204-231-3324; email: hjmc@escape.ca; web: www.geocities.com/midcanadarcautoracing

Miniatures & Passions, Ste. Therese, Quebec J7E 2B4; Gilles Lachance, (450) 979-7989

Mini-Z Hobby Shop, Markham, Ontario L3R 0W4; Brian Pong, (905)940-0898; email: info@minizhobbyshop.com; web: www.minizhobbyshop.com

Prince George Radio Controlled Car Club, Prince George, British Columbia V2M 5R9; Doug Waller, 250-561-0035

KEY TO SYMBOLS

- | | |
|---|--|
|  Indoor |  Concrete |
|  Outdoor |  Asphalt |
|  Off-road |  Minis & Micros |
|  On-road |  On-site hobby shop |
|  Oval |  AC power |
|  Dirt oval |  Auto lap counting |
|  Carpet |  Food available |

R/C Champ Raceway, Scarborough, Ontario M1H 3A4; Ben, Matthew or Louie, (416) 289-8717; web: www.rchamr.com
R/C Fanatic, Charlesbourg, Quebec G1G 3Y4; Marc Page (Club President), 418-265-2678; email: info@rcfanatic.com; web: www.rcfanatic.com

Recreation R/C Raceway, Prince George, British Columbia; Doug Waller, (604) 561-0035

Steeltown Speedway, Binbrook, Ontario L0R 1C0; Trevor Harrison, 905-692-3407 (ask for Trevor); email: the_prodigy@zdnetonebox.com; web: www.geocities.com/s_speedway

Sudbury Organized Auto Racing, Val Caron, Ontario P3E 1E6; Brad Peacock, 705-897-1435 (Brad); email: soarsudbury1@hotmail.com

The All New R.C. World, Hamilton, Ontario L0R 1W0; Dave, Larry or Brian, (905) 765-2301 or (905) 333-3297

Vancouver R/C Road Racers, Coquitlam, British Columbia V3E 1K9; Roger Brown, (604) 945-3888

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Nico Prohens Off/On Roaders, Ovalle, 4 Region 1; Nicolas Prohens, (56) 53-711579; email: nprohens@entelchile.net; web: 38939070.home.icq.com/

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COLOMBIA

Club De Automodelismo Colombiano, Sanatafe De Bogota D.C., Bogota; Jorge Delgado, 1-6130588

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Klub 144 Raceway, Lyngby 2800; Henrik Carstens, 45-42-88-3691

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La Barranquita R/C International Speedway, Santiago, (809) 582-2303

ENGLAND

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Hampshire Racing Center, Basingstoke, Hampshire; Tony Eudola, 44-1276-61402

Hinckley RCCC, Hinckley, Leicestershire; Bruce, 01455-890580

Snetterton Market Model Car Club, Norwich, Hampshire NR16 2JU; Lee Shore, 01760 724857; email: kekeza@fsmail.net; web: www.wheelspins.co.uk

Worcester Model Car Club, St. John's, Worcester WR2 609; Mr. Hardy

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Jump Square Arena, Selanhor; Thomson Chong, (603) 656-2513

Niko Sales & Service Centre, Johor Bahru; Niko Cheng, (607) 234-3615; email: niko3@pd.jaring.my; web: www.niko.com.my

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Desstrea Racing Club, Aguascalientes, Aguascalientes; Luis Lopez, 44 98 961296; email: luis_lopez@jabil.com

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Hobby's Formula, DF 01120, 905-502-3620

Jaguar R/C Club, Puebla 72150; Denise or Chiro, 22-31-00-91, 22-33-00-94

La Hielera, Queretaro, QRO 76160; Jorge Morelos Rabell, 42-12-15-25

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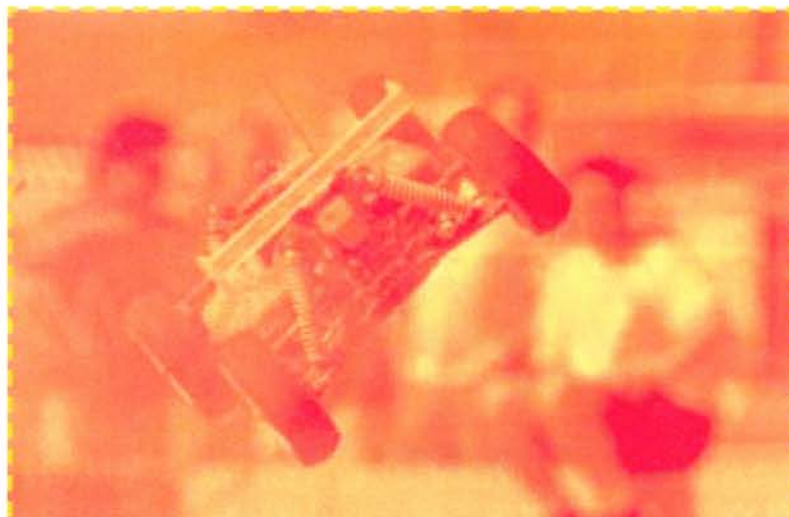
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☐ AC power

☐ Automatic lap-counting

☐ Food available

KEY TO SYMBOLS



Indoor



Outdoor



Off-road



On-road



Oval



Dirt oval



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Kevin Hetmanski's 5-Point Power Training System

Not convinced RC is a sport? Hey, it must be a sport if you can work out for it! Follow my 5-step Power Training System, and you'll be taut, toned and ready for your best season ever. Trust me, it works.

FINGER CURLS

Don't let a weak trigger finger slow you down come springtime! Grab a bungee cord, hook it up to something solid and curl away. Feel the burn! Use thicker bungee cords as the awesome power of your index finger improves, and be careful not to overtrain.



WRIST TWISTS

You'll need a jar with a screw-on lid for this workout. Tighten the lid, then try to loosen it using your steering-wheel grip. C'mon, work it! This exercise will give you the strength for lightning-fast steering inputs, with a side benefit of super-charged purple-nurpling ability.



MARSHAL SPRINTS

Show some hustle out there this spring! Place two of your RC cars about 15 feet apart, and stand between them. Now flip them over, alternating from left to right, while someone yells "Marshal! Corner! My car! Marshal!" at the top of his lungs. See how many reps you can do in one minute, rest and repeat.



TOP DRIVERS AGREE: The Kevin System works.

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I wouldn't be where I am without Kevin's incredible program. I was a 300-pound F-Main driver before I ordered the program; now I'm a world champion and 180 solid pounds of muscle and pec implants. Thanks, Kev!*

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*This is all made up. How gullible are you?



PIT-BAG SIDE BENDS

Don't risk a giant groin pull by letting your pit-bag muscles go soft during the off-season. Using a medium stance and a loaded pit bag or toolbox, perform 10 reps per set. Bend. And lift. And bend. And lift. Now the left side: bend. And lift. And bend. And lift. Yeah! You can do it! Ten more!

TUMMY SUCKS

We know it's a million-to-one shot, but there is a chance, however remote, that an attractive woman could stumble into the pits. Do you really want her to see your distended, McDonalds-bloated belly stretching your 2XL T-shirt to its limit? Of course not. Suck that gut in and hold for a three-count. Repeat. Work your way up to a full 30-second hold-in. Now try to say something clever like "Did it hurt when you fell from heaven?" without sounding strained as you hold back the fat. ■

